VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2401 2405	5. Reinforcing Steel G. Prestressing or Post-Tensioning Strand	3348		One sample (2 strands) from each heat (see **Notes**)	1.8 m (6 ft)	Submit one copy of mill certificate and one copy of the stress-strain curve representative of the lot with the samples. For most manufacturers, a heat equals a production lot, and an individual lot, pack, or reel is a subset of a heat/production lot.
2402 2506 2565	6. Drainage and Electrical Castings	3321 2471 2565	Visual Inspection	All castings: Three tensile bars to be cast with each heat at Foundry and submitted to the lab by an approved Foundry*. See 3321.		**Form 02415 or 2403** Call Maplewood Laboratory at 651-366-5540 for list of approved foundries, or see website. Inspect in the field and retain Form 02415 or 2403 in project file, showing name of foundry and quantity
2401 2402 2411 2433 2545 2554 2564 2565	7. Anchor Rods (Cast in Place) and Structural Fasteners	3385 3391	Visual Inspection and Material verification testing.	Pre-approved (see notes) or one complete anchor rod assembly including nuts and washers from each lot supplied.		Pre-approved system requires supplier to submit a sample to the Department yearly for each anchor rod or fastener type. Test results of sample must verify compliance to product specifications. Supplier shall retain copy of passing test results for one year and supply with subsequent jobs. When no previous test results are available, one complete anchor rod assembly with all required nuts and washers shall be sampled and tested from each type on the project. Prior to installation, field to obtain copy of passing test report(s).
2401 2411 2433	8. Anchorages (Drilled In)	Special Provisions	Visual Inspection	No laboratory samples required		Note: Before installation, verify that anchorages are on the qualified products list www.dot.state.mn.us/products
2402	9. Structural Steel A. For Steel Bridge – Beams, Girders, Diaphragms, etc.	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag. An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402 2405	9. Structural Steel B. For Concrete Girders- Diaphragms and sole plates	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag. An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2402	9. Structural Steel C.. Expansion joints	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2402	9. Structural Steel D. Steel Bearings	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag . An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2402	9. Structural Steel E. Railing-Structural tube and ornamental	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag. An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402	9. Structural Steel F. Drainage Systems	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag. An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2402	9. Structural Steel G. Protection Angles	2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag . An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2564	10. Overhead Sign structures	2564 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag . An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/

VII. Metallic Materials and Metal Products (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545	11. High Mast Lighting Structures	2545 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag . An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/
2565	12. Monotube Signal Structures	2565 2471	Structural Metals Inspection Tag and field inspection for damage/defects	None		Structural metals products will be inspected at the plant and will be shipped with a Structural Metals Inspection Tag . An inspection confirmation report will be completed by Structural Metals Inspection staff and sent to the field personnel. Only approved suppliers are allowed to supply Structural Metals products. A list of approved suppliers can be found on the Bridge Office web site: http://www.dot.state.mn.us/bridge/

VIII. Miscellaneous Materials

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2403 2422 2452 2521 2540 2545 2554 2557 2564	1. Timber, Lumber Piling & Posts	3412 to 3471 & 3491	Visual Inspection			**Form 02415 or 2403** Untreated materials shall be inspected in the field and the results reported on Form 02415 or 2403. Treated materials shall be Certified on the Invoice or Shipping Ticket. Material is inspected and stamped by an Independent Agency as per Specification 3491. Contact Laboratory for additional information.
2402 2405 2557 Many	2. Miscellaneous pieces and Hardware (Galvanized)	3392 3394		3 samples of each item per shipment. Sample critical items only. (Critical items are load bearing, structurally necessary items.)	Three of each type.	**Form 02415 or 2403** Will carry "Inspected" tag if sampled and tested prior to shipment. No sample necessary if "Inspected".
2504	3. Insulation Board	3760	Visual Inspection	None		**Form 02415 or 2403**
2402	4. Elastomeric Bearing Pads	3741 and Special Provisions	Check dimensions Check repair of tested pad	One sample, with one or more internal plates annually from each manufacturer.	Full size pad	Submit copy of Certificate of Compliance with pad. Do not use any pads that are not certified.

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2402 2422 2501 2503 2506	1. Corrugated Metal Products A. Culvert Pipe Underdrains Erosion control Structures	3225 thru 3229, 3351 and 3399	Visual Inspection: Check for good construction, workmanship, finish requirements and shipping			**Form 02415 or 2403** Make certain pipe is Certified on Invoice, retain certificate of compliance and certified mill analysis in project file
2501	1. Corrugated Metal Products B. Structural Plate	3231	Visual Inspection: Invoice shall include notation that material described is in accordance with fabricator's Certificate and Guarantee			**Same as 1.A**

IX Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2501	1. Corrugated Metal Products C. Aluminum Structural Plate	3233				Retain certificate of compliance and certified mill analysis in project file
2503 2506	2. Clay Pipe	3251	No samples required for less than 100 pieces	1 sample per 200 pieces of each size.	Full Size Pipe	**Form 02415 or 2403**
2501 2503 2506	3. Concrete Pipe A. Reinforced Pipe and Arches, Precast Cattle Pass Units, and Sectional Manhole Units	3236	Field Inspection: Check for damage and defects. Check dimensions as required. Check for producer's "Certified" stamp and signature on the certification document.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		**Form 02415 or 2403** For Concrete Pipe Both A & B: Product will be certified by producer, only spot checks are done by plant inspector. Make certain the invoice or certification document is signed and the product has the required markings. Maintain Form 2403 or 02415 in project records, showing source of materials and type and quantity used
2503 2506	3. Concrete Pipe B. Non-Reinforced Concrete Pipe	3253	Field Inspection: Check for damage and defects. Check dimensions as required. Check for producer's "Certified" stamp and signature on the certification document.		Full Size Pipe	**See 3.A**
2501 2503 2506	3. Concrete Pipe Fine Aggregate	3126		1 quality test per month during production for A and B above.	10 kg. (25 lb.)	
2501 2503 2506	3. Concrete Pipe Coarse Aggregate	3137		1 quality test per month during production for A and B above.	10 kg. (25 lb.)	

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2412	4. Precast/Prestressed Concrete Structures A. Reinforced Precast Box Culvert	3238	1 air test per pour (1st load), One set of cylinders per 25 cubic yards, with a minimum of two cylinders per set. Alternate cylinder acceptance systems may be allowed with the approval of the State Materials Engineer.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		Precast/prestressed Concrete Structure (beams, posts, etc.) will be inspected and stamped at plant. Field personnel are responsible for checking for plant inspector's stamp, for shipping/handling damage or defects, and dimensions. An inspection report will be completed by plant personnel and sent to the field personnel.
	Fine Aggregate	3126		1 quality test per month during production.	10 kg. (25 lb.)	
	Coarse Aggregate	3137		1 quality test per month during production.	10 kg. (25 lb.)	
2405	4. Precast/Prestressed Concrete Structures B. Precast/Prestressed Concrete Structure (beams, posts, etc.).	2405	1 air test per pour (1st load), One set of cylinders per 25 cubic yards, with a minimum of two cylinders per set, and one set per beam. Alternate cylinder acceptance systems may be allowed with the approval of the State Materials Engineer.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		Precast/prestressed Concrete Structure (beams, posts, etc.) will be inspected and stamped at plant. Field personnel are responsible for checking for plant inspector's stamp, for shipping/handling damage or defects, and dimensions. An inspection report will be completed by plant personnel and sent to the field personnel.
	Fine Aggregate	3126	Gradation: 1 per 150 m^3 (200 Cu. yd.) or fraction thereof. 1 per day of production or 3 per week, whichever is less.	1 gradation and 1 quality test per month during production from a split sample. Include producer's gradation results on sample card.	10 kg (25 lb.)	
	Coarse Aggregate	3137	Gradation: 1 per 75 m^3 (100 Cu yd) or fraction thereof. 1 per day of production or 3 per week, whichever is less.	1 gradation and 1 quality test per month during production from a split sample. Include producer's gradation results on sample card.	10 kg (25 lb.)	

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2506	5. Manholes and Catch Basins (Construction)	2506 3622	Field Inspection: Check for damage and defects. Check dimensions as required. Check for Producer's "Certified" stamp and signature on the certification document.	1 "companion" cylinder per month per plant during production, or cylinder testing machine, whichever is greater. Call Precast Inspection Engineer at 651-366-5540 for additional information.		**Form 02415 or 2403** Product will be certified by producer or inspected, tested and stamped at source. Only spot checks are done by plant inspector. Make certain the invoice or certification document is signed and the product has the required markings. Maintain Form 2403 or 02415 in project records, showing source of materials and type and quantity used (bricks, blocks, precast, or combination).
2502	6. Drain Tile (Clay or Concrete)	3276	Visual Inspection	2 samples of each size from each source		
2502 2503	7. Thermoplastic (TP) Pipe ABS and PVC	3245	Obtain Certificate of compliance. Check for approved marking printed on pipe. Field Inspect for damage or defects.			**Form 02415 or 2403** See Spec. 3245 for specific AASHTO or ASTM Pipe types are approved under this specification. If perforated, holes should be 5mm - 10 mm (3/16 - 3/8 inch) diameter, two rows for 4", and four rows for 6" diameter; approximately 75 mm (3 inches) on center.
2502	8. Corrugated Polyethylene Pipe – Single wall for edge drains, etc.	3278	Check for markings (AASHTO M 252) Certificate of Compliance. Field Inspect for damage or defects.	No Laboratory tests required		**Form 02415 or 2403**
2503	9. Sewer Joint Sealing Compound	3724		One per shipment	0.5 liter (1 pt.)	
2412 2501 2503	10. Preformed Plastic Sealer for Pipe	3726 Type b		One from each source	0.3 m (1 ft)	
2412 2501 2503	11. Bituminous Mastic Joint Sealer for Pipe	3728	Visual Inspection	Sample, if questionable		

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2105	12. EPS Geofoam	Special Provisions	Visual Inspection Check for yellow aged material, uniformity and dimensions. Weigh 1'x1'x1' cut coupon to verify density every 200 m^3 (250 yd^3)			Form 02415 or 2403
2501 2503	13. Corrugated Polyethylene Pipe – Dual Wall, 12" – 48"	3247				For Specification 3247, Corrugated Polyethylene Pipe (HDPE) manufacturing facilities are required to be reviewed yearly and in compliance with AASHTO's National Transportation Product Evaluation Program (NTPEP) for producers of AASHTO M294 HDPE pipe. To determine if a pipe manufacturing plant is qualified, click on the following link for M294 pipe. http://data.ntpep.org/Module/PIPE/StatusReport.aspx If a plant has a compliant NTPEP audit for AASHTO M294 pipe at the time the pipe is manufactured, then the plant has met requirements. Note that a previous year's audit shall govern until NTPEP issues the next year's audit. A Certificate of Compliance shall be provided in accordance with Specification 1603.

IX. Geosynthetics, Pipe, Tile, and Precast/Prestressed Concrete (Cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes

2105
2411
2412
2501
2502
2511
2512
	14. Geotextile Fabric and Geogrid Reinforcement	3733 and Special Provisions	Inspect for damage and uniformity of texture. Rolls of both geotextile and geotextile wrapped PE Tubing must be wrapped in UV protective plastic. (Usually Black). Obtain Certificate of Compliance
			
			If using adhesive for seams, see Approved/Qualified Product List available at the Department's website
				(a) 1 per project for pipe wrap or trench lining for Permeable base designs.
				
				(b) 1 per 50,000 yd^2 (40,000 m^2) or fraction thereof of each type fabric or geogrid for all other uses.
				
				(c) Seam, if required, 1 per project minimum, additional as appropriate.
				
				Small Quantity Acceptance
				• For fabric totals less than 200 yd^2 (170 m^2)
				• For pipe wrap totals less than 1000 Lin. Ft
				• No sampling required
				• Use Inspection Report for Small Quantities (Form 2403)
				• Check:
				  ○ Certificate of Compliance
				  ○ Identifying label on product
				  ○ Geotextile Small Quantity Acceptance List at
				
				http://www.dot.state.mn.us/materials/aggregatedocs/gtxlist.pdf
					(a) 10 Lin. Ft. (3 m)
					
					(b) 4 yd^2 (3 m^2)*
					
					(c) 10 Lin. Ft. (3 m)**
						Certificate of Compliance shall state material identification (e.g. Propex 2002, Miragrid 8XT), and minimum average roll values (MARV) for all specified geotextile properties. MARV values must meet the Specification 3733 Types 1 through 7 requirements for the specific application. Submit copy of Certificate with material samples sent to the Materials Laboratory.
						
						Submit additional sample(s), if the manufacturer or model of geotextile or geogrid used changes during construction.
						
						Sampling shall be by random selection and no more than one sample shall be taken from an individual roll. For type 6 applications (including geogrids), submit pages of Special Provisions that list required material properties. (Type 6 requirements are job specific.) For Modular Block Walls or Reinforced Soil Slopes, submit page(s) of shop drawings that reference geogrid/geotextile to be used (product name) and/or required properties.
						
						* Do not sample first full turn of rolled product.
						** Seam sample to include approximately 3 ft (1 m) of geosynthetic material on each side of seam (in direction perpendicular to seam).

X. Brick, Stone, and Masonry Units

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2506	1. Brick A. Sewer (clay) and Building	3612 to 3615	Visual Inspection	One sample per 50,000 brick or fraction thereof	6 whole bricks	
2506	1. Brick B. Sewer (Concrete)*	3616	Visual Inspection	One sample per shipment.	6 whole bricks	* Air entrainment required. Obtain air content statement from supplier.
2506	2. Concrete Masonry Units A. For Sewer Construction	3621	Visual Inspection	One sample per shipment	6 whole units	Air entrainment required. Obtain air content statement from supplier.
2411	2. Concrete Masonry Units B. For Modular Block Retaining Walls	Special Provisions	Visual Inspection Check for cracks and broken corners	One sample per 10,000 units or fraction thereof, with a minimum of one sample per product (block) type per contract.*	5 whole units	All lots of block upon delivery shall have Manufacturer or Independent laboratory test results to verify passing both compression and freeze-thaw requirements. * Wall units and cap units are considered separate block types.
2422	3. Reinforced Concrete Cribbing	3661	Concrete control tests Air Tests Visual Inspection if previously tested	One cylinder per 100 units, but not less than 5 cylinders for a given contract. Other materials as required herein.	150 x 300mm (6 x 12 in) Cylinders	Form 02415 or 2403 Will be stamped when inspected prior to shipment.
2511 2512 2577	4. Stone for Masonry or Rip-Rap	3601 and Special Provisions	Visual Inspection Submit Form 02415 unless special testing is specified			Form 02415 or 2403 Each source shall be approved by Project Engineer or Supervisor for quality, prior to use. For questions on quality, contact District Materials or Geology Unit.

XI. Electrical and Signal Equipment Items

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545	1. Lighting Standards (Aluminum or Steel)	3811	Visual Inspection			The Fabricator shall submit "Certificate of Compliance", on a per project basis, to the Project Engineer..
2545 2550 2565	2. Hand Holes (Precast, PVC, and LLDPE)	2545 2550 2565				Form 02415 or 2403 Traffic signals and street lighting projects require handholes and frames and covers to be listed on the Mn/DOT Approved/Qualified Products List (A/QPL) for signal. For cast iron frame and cover: see VII.6, Drainage Castings
2545 2565	3. Foundation	2545	Slump as needed	1 cylinder per 20 m^3 (25 Cu. yd.)		Rebar is required in concrete foundations as specified in the Contract documents for all traffic signal and street lighting projects.
2402 2545 2565	4. Conduit and Fittings A. Metallic	3801 3802	Visual Inspection	None		Form 02415 or 2403 Conduit shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). Retain Form 02415 or 2403 in Project File
2545 2565	4. Conduit and Fittings B. Non-Metallic (Rigid and HDPE)	3803 Special Provisions	Visual Inspection			Form 02415 or 2403 Conduit shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL). Retain Form 02415 or 2403 in Project File. For traffic signal and street lighting projects, specific requirements are contained in the Special Provisions for each project.
2545 2565	5a. Anchor bolts (cast in place)	2545 2565				See section VII, 7.
2545	5b. Anchorages (Drilled In)	2545				See section VII, 8.

XI. Electrical and Signal Equipment Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545 2565	6. Miscellaneous Hardware	2545 2565	Visual Inspection	Sample critical items only. One of each item per shipment. (Critical Items are load bearing, structurally necessary items.)		Will carry "Inspected" tag if sampled and tested prior to shipment. No sample necessary if "Inspected". Do not use if not tested. Field sample at sampling rate for laboratory testing. For traffic signal and street light lighting projects, various miscellaneous hardware is required to be listed on the Mn/DOT Signals and Lighting Approved/Qualified Products Lists (A/QPL). The Contract documents indicate which items must be on the Signals and/or Lighting APL.
2545 2550 2565	7. Cable and Conductors A. Power Conductors Loop Detector Conductors (No Tubing) Underground Service Entrance (USE) cables	3815.2B1 3815.2B2(a) Special Provisions	Visual Inspection	None		Form 02415 or 2403 Make certain the conductors are the type specified. Submit Field Inspection report showing type and quantities used. Shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL) and type where applicable.
2545 2550 2565	7. Cable and Conductors B. Electrical Cables and Single Conductors with Jacket	3815.2B2(b) 3815.2B3 3815.2B5 3815.2C1 3815.2C3 3815.2C4 3815.2C5 3815.2C6 3815.2C7 3815.2C8 3815.2C14 Special Provisions	Visual Inspection	1 sample per size per lot	1.5m (5 ft)	**Form 02415 or 2403** Usually inspected at the distributor. Documentation showing project number, reel number(s), & Mn/DOT test number(s) will be included with each project shipment. If such documentation is not received from Contractor, submit sample for testing along with material certification from manufacturer. Do not use if not tested. Pre-inspected materials will not be tagged; an inspection report will be sent by the Mn/DOT inspector for each shipment. Project inspectors should verify that the shipping documents agree with this inspection report. Call Steve Grover at 651-366-5540 or Cindy Schellack at 651-366-5543 with questions. For traffic signal and street lighting projects, the Special Provisions for each project contain electrical cable and conductor specifications.
2545 2550 2565	7. Cable and Conductors C. Fiber Optic Cables	3815.2C13	Visual Inspection - verify make and model number as shown in Special Provisions	None		**Form 02415 or 2403** Fiber optic cables shall be listed on the Mn/DOT Approved/Qualified Products List (A/QPL) for Traffic Management Systems/ITS.

XI. Electrical and Signal Equipment Items (cont.)

Pay Item No.	Kind of Material	Spec. No.	Minimum Required Acceptance Testing (Field Testing Rate)	Minimum Required Sampling Rate for Laboratory Testing	Sample Size	Notes
2545 2565	8. Ground Rods	2545 2565	Visual Inspection	None.		**Form 02415 or 2403** Retain Form 02415 or 2403 in project file. Shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL).
2545	9. Luminaires and Lamps	3810				**Form 02415 or 2403** Traffic signal and street lighting projects require luminaries and lamps to be listed on the Mn/DOT Approved/Qualified Products List (A/QPL) for Lighting. The conductors shall be labeled as being listed by a National Recognized Testing Laboratory (NRTL) and type, where applicable.
2545	10. Electrical Systems					Electrical Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report. To be certified by the Project Engineer.
2565	11. Traffic Signal Systems	2565				Traffic Signal Systems are to be reported as a "System" using the Lighting, Signal, and Traffic Recorder Inspection Report. To be certified by the Project Engineer.

(2301) CONCRETE PAVEMENT (2012 VERSION)

MnDOT 2301 shall be deleted and replaced with the following:

2301.1 DESCRIPTION

This work consists of constructing portland cement concrete pavement on a prepared base.

The Department defines paving concrete to include concrete mainline, ramps, loops, integrant curb, shoulders, and curb and gutter placed adjacent to the concrete mainline with the same mixture used in the paving. Integrant curb is a curb constructed monolithically with the pavement.

For the purposes of concrete pavement, the Department defines a concrete plant as the following:

(1) A paving plant using dump or agitator trucks to haul concrete, or
(2) A certified ready-mix plant using truck mixers to haul concrete.

For concrete pavement incentives and disincentives, the Department defines a concrete plant as the following:

(1) A primary concrete plant providing the majority of the concrete to a paving project, and
(2) A secondary concrete plant providing any minor work or fill-ins not provided by the primary concrete plant.

Only one primary concrete plant per project is allowed unless otherwise approved by the Engineer. The Contractor may use a paving plant or a certified ready-mix plant as the primary concrete plant.

2301.2 MATERIALS

A Concrete 2461
A.1 Slipform Placement ..... Mix No. 3A21
A.2 Fixed Form Placement ..... Mix No. 3A41
B Coarse and Fine Aggregate Requirements

Test each aggregate fraction proposed for use in accordance with Table 2301-1:

Table 2301-1
Aggregate Testing Requirements

Aggregate	Testing Required
Tested by Department in the last 3 years	No additional testing *
Not tested by the Department in the last 3 years	Preliminary aggregate testing in accordance with 2301.3.B.1
New source	New source concrete aggregate testing in accordance with 3126 and 3137

* Perform additional testing as required by the Engineer in conjunction with the Concrete Engineer.

B.1 Required Preliminary Aggregate Testing

After the Department awards the Contract and as soon as coarse and fine aggregates are available for testing, contact the Engineer to coordinate preliminary sampling of aggregate for concrete paving. The Engineer in conjunction with the Concrete Engineer will sample and test the aggregate to verify specific gravity, absorption data, and aggregate quality. The Department will perform other tests as determined necessary by the Engineer in conjunction with the Concrete Engineer.

B.2 Aggregate Alkali Silica Reactivity (ASR) Requirements for Concrete Mixes

The Department will test the designated fine aggregate for alkali silica reactivity (ASR) with Holcim, St. Genevieve, Type I/II portland cement and Lafarge, Davenport, Type I/II portland cement in accordance with ASTM C 1260 MnDOT Modified. If the fine aggregate contains an intermediate size aggregate such as "buckshot" or "pearock" as determined by the Concrete Engineer, the Department will perform testing in accordance with ASTM C 1260.

The Concrete Engineer, in coordination with the Engineer, will review the 14-day fine aggregate expansion test results to determine the acceptability of the proposed fine aggregate and cement combination in accordance with the 14-day fine aggregate expansion limits in Table 2301-2.

Table 2301-2
Fine Aggregate ASR Mitigation Requirements

14-day Fine Aggregate Expansion Limits	
≤ 0.150	The Department will accept the fine aggregate with or without a mitigator
> 0.150 – 0.250	Mitigate the fine aggregate with 35 percent ground granulated blast furnace slag or at least 20 percent fly ash
> 0.250 – 0.300	Mitigate the fine aggregate with 35 percent ground granulated blast furnace slag or 30 percent fly ash in accordance with 3115, modified with at least 66.0 percent $SiO_2 + Fe_2O_3 + Al_2O_3$ on a dry weight basis and at least 38.0 percent SiO_2
> 0.300	The Department will reject the fine aggregate

For fine aggregate and cement combinations previously tested by the Department, the Concrete Engineer will use the previous test results to determine necessary mitigation. The Contractor may contact the Department to access the list of previously tested fine aggregate sources.

If the fine aggregate and cement combination were not previously tested, the Concrete Engineer will use the higher expansion result of the two fine aggregate and cement combinations to determine necessary mitigation.

Add "buckshot" or "pea rock as a separate aggregate in accordance with the quality requirements of 3137, except the Department will determine the shale content in accordance with AASHTO T 113 MnDOT Modified, "Lightweight Pieces in Aggregate" fine aggregate procedure. If this aggregate is from the same source as the ¾ in+ [19 mm+] or ¾ in– [19 mm–] aggregate, the Concrete Engineer will waive the requirements specified in 3137.2D3(c), "Carbonate in Class C aggregate by weight.". If this aggregate is from sources other than the ¾ in+ [19 mm+] or ¾ in– [19 mm–] aggregate, approval is at the discretion of the Concrete Engineer.

The Concrete Engineer may reject the fine aggregate if mortar bar specimens exhibit an indication of external or internal distress not represented by the expansion results. The Concrete Engineer will make the final acceptance of the aggregate.

C Cementitious Materials

Design the concrete paving mixes in accordance with the following requirements for cementitious material:

(1) Total alkalis no greater than 0.60 percent in the portland cement ($Na_2O + 0.658\ K_2O$)
(2) Total alkalis no greater than 5.0 lb per cu. yd [3.0 kg per cu.m] in the combined cementitious material
(3) At least 530 lb per cu. yd [315 kg per cu. m] minimum cementitious,
(4) At least 400 lb per cu. yd [237 kg per cu. m] of portland cement when using fly ash or at least 385 lb per cu. yd [228 kg per cu. m] when using slag as a portland cement replacement,
(5) Provide additional cementitious material to meet requirements in accordance with this section at no additional cost to the Department,
(6) Total cementitious material no greater than 600 lb per cu. yd [356 kg per cu. m] except for high-early strength mixes.

The Department defines high-early strength concrete as concrete with a cementitious content of greater than 600 lb per cu. yd [356 kg per cu. m].

The Contractor may use 100 percent portland cement for the cementitious material for high-early mixes, except if using quartzite or gneiss coarse aggregate provide high-early mixes in accordance with 2301.2.C.1.

C.1 Special Cementitious Requirements for Quartzite and Gneiss

If providing coarse aggregate from sources identified by the Department as quartzite or gneiss and if the coarse aggregate does not meet the 0.04 percent expansion limit when tested in accordance with ASTM C 1293, replace the portland cement with the following:

(1) 30 percent of a MnDOT certified fly ash from the Approved Products list in accordance with 3115, except provide fly ash in the concrete mixture with at least 66 percent $SiO_2 + Fe_2O_3 + Al_2O_3$ on a dry weight basis for at least 12 consecutive months and at least 38 percent SiO_2 content, or

(2) 35 percent of a MnDOT certified ground granulated blast furnace slag from the Approved Products list.

D Concrete Mix Design Requirements

Design the concrete mix based on an absolute volume of 27.00 cu. ft ± 0.10 cu. ft [1.000 cu. m ± 0.003 cu. m] in accordance with the following:

(1) Fine aggregates complying with the requirements of Specification 3126 for aggregate quality.
(2) Coarse aggregates complying with the requirements of Specification 3137 for aggregate quality.
(3) Air content of 7.0 percent plus or minus 1.5 percent at the point of placement.
(4) High-early concrete placed at a water-cementitious ratio not greater than 0.38.

Submit the concrete mixes utilizing the MnDOT Contractor Mix Design Submittal Worksheet available on the Department's website at least 21 calendar days before the initial placement of concrete using the concrete mix design. For mix design calculations, the Engineer, in conjunction with the Concrete Engineer, will provide specific gravity and absorption data.

The Concrete Engineer, in coordination with the Engineer, will review the mix design submittal and approve the materials and mix design for compliance with the Contract.

The Contractor assumes full responsibility for the mix design and performance of the concrete.

The Engineer determines final acceptance of concrete for payment based on satisfactory field placement and performance.

D.1 Concrete Pavement < 3,500 cu. yd. [2,900 cu. m]

If the estimated quantity of concrete pavement in the Contract is less than 3,500 cu. yd. (2,900 cu. m.), calculated by multiplying the planned pavement area by the planned pavement thickness, provide a mix design meeting the following requirements:

(1) Grade A paving concrete placed at a water/cement ratio not greater than 0.42.
(2) Provide a fine aggregate gradation complying with Table 3126-3.
(3) Provide either a CA-15, CA-35, or CA-50 coarse aggregate gradation complying with the requirements of Table 3137-4.
(4) In lieu of (2) and (3) above, provide a Job Mix Formula in accordance with 2301.2.D.3.
(5) Specification 2301.2.D.4 incentive/disincentives for aggregate quality, well-graded aggregate and w/c ratio shall not apply.

D.2 Concrete Pavement ≥ 3,500 cu. yd. [2,900 cu. m]

If the estimated quantity of concrete pavement in the Contract is at least 3,500 cu. yd. [2,900 cu. m], calculated by multiplying the planned pavement area by the planned pavement thickness, provide a mix design meeting the following requirements:

(1) Grade A paving concrete placed at a water/cement ratio not greater than 0.40.
(2) Submit a Job Mix Formula in accordance with 2301.2.D.3.
(3) For concrete produced at a secondary concrete plant or as otherwise allowed by the Engineer, the Contractor has the option to design a mix in accordance with 2301.2.D.1.

(4) Specification 2301.2.D.4 incentive/disincentives for aggregate quality, well-graded aggregate and w/c ratio apply.

D.3 Job Mix Formula

Use at least two fractions of coarse aggregate that include the ¾ in+ [19 mm+] and ¾ in– [19 mm–] fractions.

A Job Mix Formula (JMF) contains proportions of materials and individual gradations of each material plus a composite gradation. The Engineer will base the JMF on the combination of coarse and fine aggregate in accordance with Table 2301-3. The Department will waive the gradation requirements of 3126 and 3137.

Table 2301-3
Job Mix Formula Working Range

Sieve Sizes	Working Range, %*
2 in [50 mm]	±5
1½ in [37.5 mm]	±5
1 in [25 mm]	±5
¾ in [19 mm]	±5
½ in [12.5 mm]	±5
⅜ in [9.5 mm]	±5
No.4 [4.75 mm]	±5
No.8 [2.36 mm]	±4
No.16 [1.18 mm]	±4
No.30 [600 µm]	±4
No.50 [300 µm]	±3
No.100 [150 µm]	±2
No.200 [75 µm]	≤ 1.6

* Working range limits of the composite gradation based on a moving average of 4 tests (N=4).

Add fill-in sieves as needed during the testing process to prevent overloading. Provide combined aggregates with 100 percent passing the 2 in [50 mm] sieve and no greater than 1.6 percent passing the No. 200 [75 µm] sieve. In addition, each coarse aggregate fraction must comply with the Material Passing the No. 200 [75 µm] sieve requirement in 3137.2.D.1.i.

Include working ranges based on the composite gradation of the sieves specified in Table 2301-3 with the JMF submittal.

Take samples at the belt leading to the weigh hopper or other locations close to the incorporation of the work as approved by the Engineer. The Engineer will determine the sampling location by using a random number chart and multiplying the random number by the sampling rate as defined in the Schedule of Materials Control. Test, and record the individual results.

The Engineer will randomly verify Contractor combined aggregate gradation results as defined in the Schedule of Materials Control.

If the quantities of concrete produced results in no gradation testing for any given day, include the untested quantity of concrete into the next day's production and include that quantity of concrete in the sampling rate. If the untested quantity is on the last day of production, add that quantity to the previous day's production.

D.3.a JMF Adjustments

If, during production, the moving average of QC aggregate gradation tests falls outside the allowable JMF working range, make adjustments within the limits specified in Table 2301-4 without submitting a new mix design as approved by the Engineer.

Table 2301-4 Allowable JMF Adjustments	
Sieve Size	**Allowable Adjustment, %**
≥ No. 4 [4.75 mm]	±5
No. 8 [2.36 mm] – No.30 [600 µm]	±4
No. 50 [300 µm]	±3
No. 100 [150 µm]	±2

The Contractor may continue paving after submitting a new JMF with working range and aggregate volume adjustments to the Engineer. Submit all JMF adjustments on the MnDOT JMF Adjustments Worksheet available from the Department's website.

If the moving average of four tests falls outside of the adjusted allowable working range, stop production and provide a new mix design including JMF as directed by the Engineer in conjunction with the Concrete Engineer.

D.4 Concrete Pavement Incentives and Disincentives

The Department shall apply concrete mix incentives and disincentives for Contracts using at least 3,500 cu. yd [2,900 cu. m] of concrete, calculated by multiplying the planned pavement area by the planned pavement thickness, of paving concrete.

The Department will only apply coarse aggregate quality incentives or disincentives for materials provided or produced by the Contractor's primary concrete plant.

The Department will not provide water/cement ratio incentive payments for high-early mixes. The Department will only apply water/cement incentives or disincentives for concrete hauled in dump trucks, agitator trucks, or both.

If the Contractor adds water to the pavement surface without approval by the Engineer, the Department will not pay water/cement or ride incentives on sections where the water is added and the Engineer may reject the pavement in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work."

D.4.a Coarse Aggregate Quality Incentive/Disincentive

The Engineer will accept the coarse aggregate for paving concrete by statistical methods and in accordance with all other aggregate quality requirements of 2301, 2461, and 3137.

The **Coarse Aggregate Quality Incentive/Disincentive** for CLASS B and CLASS C Aggregates will comply with the following:

The Engineer will take samples at the belt leading to the weigh hopper or other locations close to the incorporation of the work as approved by the Engineer. The Engineer will take samples in accordance with Table 2301-5:

Table 2301-5 Coarse Aggregate Quality Incentive/Disincentive Sampling Rates	
Plan Concrete, cu. yd [cu. m]	**Samples per Fraction (n)**
3,500 – 7,500 [2,900 – 6,250]	3
7,501 – 10,000 [6,251 – 8,500]	5
10,001 – 25,000 [8,501 – 21,000]	10
25,001 – 50,000 [21,001 – 42,000]	15
50,001+ [42,001+]	20

The Engineer will consider the entire Project as a single lot for each of the two fractions containing the highest percentage by weight. If the Project is planned for construction over multiple years and prior to placing any concrete pavement, the Contractor shall request the Engineer calculate the incentive/disincentive payment on a

yearly basis. The Engineer, in conjunction with the Concrete Engineer, will modify the sampling and testing rates as necessary.

The Engineer will establish a new statistical family for each change in aggregate source, fraction, or both.

The Engineer will randomly choose the acceptance samples.

The Engineer will divide a lot representing the Plan cubic yards [cubic meters] of concrete by the number of samples to form sublots. The Engineer will multiply the number of cubic yards [cubic meters] in a sublot by a random number to obtain the position in the sublot for the sample. The Engineer will split the samples and leave half of the sample for the Contractor. The Engineer's laboratory will test the samples and report the individual results. The Engineer will calculate a Quality Index (QI) for each fraction in accordance with the following:

$$QI = X + k(s)$$

Where:

$$X = \text{mean} = \sum \frac{X_i}{n}$$

X_i = individual test results

$$s = \text{standard deviation} = \sqrt{\sum \frac{(x_i - x)^2}{(n-1)}}$$

k = Adjustment Factor based on the number of tests as shown in Table 2301-6:

Table 2301-6
Adjustment Factor "k"

k	No. of Tests
1.09	3
1.23	5
1.26	10
1.27	≥ 15

If Class A, Class B, and Class C aggregates meet the requirements as determined by the Engineer, the Department will provide payment based on a per fraction incentive in accordance with Table 2301-7.

Table 2301-7 Coarse Aggregate Quality Incentive/Disincentive		
Aggregate Class	**QI for Fraction, %**	**Structural Concrete per cu. yd [cu. m] Payment Change per Fraction**
Class A (including quartzite and gneiss)	—	$1.00 [$1.30]
Class B (based on % absorption)	≤1.00	$1.00 [$1.30]
	1.01 – 1.45	$0.50 [$0.65]
	1.46 – 1.76	$0.00
	1.77 – 1.85	-$1.00 [$1.30]
	≥ 1.86	As recommended by the Concrete Engineer, with coordination of the Engineer
Class C (based on % carbonate)	≤ 15.0	$1.00 [$1.30]
	15.1 – 24.0	$0.50 [$0.65]
	24.1 – 31.0	$0.00
	31.1 – 35.0	-$1.00 [$1.30]
	≥ 35.1	As recommended by the Concrete Engineer, with coordination of the Engineer

The Department will not pay incentives or disincentives for Class R aggregates.

If the concrete mixture contains at least three fractions of coarse aggregate, the Engineer will consider only the two containing the highest percentage by weight as eligible for incentive. The Contractor may combine at least two sub-fractions to form the ¾ in – [19 mm –] fraction for either the coarse or fine fraction of the coarse aggregate. Blend the sub-fractions by weight. The Engineer will base the maximum incentive for aggregate quality on the two largest fractions by weight.

The Department will pay for Coarse Aggregate Quality Incentive/Disincentive for all paving concrete, including water/cement ratio concrete, and high-early concrete provided by the Contractor's primary paving plant.

D.4.b Water/Cement (w/c) Ratio

Provide and place concrete with a water/cement ratio not to exceed 0.40. Make any adjustments immediately when the water/cement ratio exceeds 0.40.

The Department will not make incentive payments for water/cement ratio on high-early mixes.

Do not add water to the surface of the concrete to aid in finishing without the approval of the Engineer. Supply sufficient trucks to ensure a steady forward progress of the paver.

The Department will determine the water/cement ratio for concrete hauled in dump or agitator trucks (concrete hauled in truck mixers are not eligible for w/c ratio incentives) in accordance with the following:

D.4.b(1) Water Content Determination

For a concrete paving batch plant, use an electronic meter approved by the Engineer to record the water, including temper water, added to the mix that is capable of printing the amount of total water on each batch ticket.

For a ready-mix plant, record the total water added to the mix, including temper water, on the computerized Certificate of Compliance.

The Engineer will determine the water content for calculating the water/cement ratio using the average water calculated from 10 batch tickets or Certificates of Compliances surrounding the randomly selected batch ticket sample (four previous tickets, ticket representing the random sample, and the five following tickets).

D.4.b(2) Water Content Verification

The Engineer will use plastic concrete taken at the plant site to verify the water content in the mix as determined in accordance with 2301.2.D.4.b.(1), "Water Content Determination." The Contractor will sample the plastic concrete as directed by the Engineer.

The Engineer will verify the water content in the plastic concrete mixture using the test procedure specified in AASHTO T 318-02, "Standard Test Method for Water Content of Freshly Mixed Concrete Using Microwave Oven Drying." The Engineer will begin the test within 45 min after the water has contacted the cement. Provide the microwave oven and the ancillary equipment as required by the Engineer to perform this test.

D.4.b(3) Cementitious Content Determination

The Engineer will determine the cementitious content for calculating the water/cement ratio using the average total cementitious calculated from 10 batch tickets or Certificates of Compliances surrounding the randomly selected batch ticket sample (four previous tickets, ticket representing the random sample, and the five following tickets).

D.4.b(4) W/C Ratio Incentive/Disincentive

The Engineer will base the statistical analysis of acceptance for water/cement ratio in accordance with with 2301.2.D.4.b(1), "Water Content Determination," and 2301.3.D.4.b(3), "Cementitious Content Determination," at a rate defined in the Schedule of Materials Control.

The Engineer will randomly choose acceptance samples. The Engineer will determine the sampling location by using a random number chart and multiplying the random number by the sampling rate as defined in the Schedule of Materials Control.

The Engineer will sample, test, and record the individual results.

If the quantities of concrete produced results in no Agency moisture testing for any given day, include the untested quantity of concrete into the next day's production and include that quantity of concrete in the sampling rate. If the untested quantity is on the last day of production, add that quantity to the previous day's production.

Do not place concrete mix not meeting the 0.40 water/cement ratio requirement in the work. The Engineer may accept material not meeting the Contract requirements and the Department will pay for the work in accordance with Table 2301-8.

Table 2301-8
W/C Ratio Incentive/Disincentive

W/C Ratio Test Result	Payment incentive/disincentive per cu. yard [cu. m]
≤ 0.37	+$3.00 [$3.90]
0.38	+$1.75 [$2.25]
0.39	$0.50 [$0.65]
0.40	$0.00
0.41	-$0.50 [$0.65]
0.42	-$1.75 [-$2.25]
0.43	-$3.00 [-$3.90]
≥ 0.44	Determined by the Concrete Engineer

The Contractor may remove and replace concrete represented by water/cement ratios greater than 0.40. For concrete left in place with water/cement ratios greater than 0.40, if the level of payment is not defined in the table, the Engineer in conjunction with the Concrete Engineer, will evaluate the material based on the adequacy of the material for the use intended. Remove and replace unsatisfactory concrete as determined by the Engineer at no additional cost to the Department.

D.4.c Well-Graded Aggregate Optional Incentive

The Engineer will use the Contractor's combined aggregate gradation test results, as verified by Department testing, to determine eligibility for the incentive.

The Contractor has two well-graded aggregate optional incentives available as follows:

(1) Percent Retained Gradation Band in accordance with Table 2301-9.

TABLE 2301-9
8-18 or 7-18 Percent Retained Gradation Band

Sieve Sizes	8-18 % Retained	7-18 % Retained
2 inch [50 mm]	0%	0%
1 ½ inch [37.5 mm]	≤9%	≤9%
1 inch [25 mm]	8% to 18%	7% to 18%
¾ inch [19 mm	8% to 18%	7% to 18%
½ inch [12.5 mm]	8% to 18%	7% to 18%
3/8 inch [9.5 mm]	8% to 18%	7% to 18%
#4 [4.75 mm]	8% to 18%	7% to 18%
#8 [2.36 mm]	8% to 18%	7% to 18%
#16 [1.18 mm]	8% to 18%	7% to 18%
#30 [600 µm]	8% to 18%	7% to 18%
#50 [300 µm]	≤ 13%	≤ 13%
#100 [150 µm]	≤8%	≤8%
#200 [75 µm]	≤8%	≤8%

(2) Gradation Zone II-A of the Coarseness Factor Chart in accordance with Table 2301-10.

TABLE 2301-10
Coarseness Factor Boundaries – Zone II-A

Coarseness Factor (CF)	Workability Factor (WF)
52	34 - 38
68	32 - 36
The Coarseness Factor (CF) is defined as follows: $CF = \frac{\text{Combined \% retained above 3/8 in [9.5 mm] sieve}}{\text{Combined \% retained above No.8 [2.36 mm] sieve}} \times 100$	The Workability Factor (WF) is defined as follows: WF = Combined % passing No.8 [2.36mm] sieve

The Engineer will use statistical analysis of the Contractor's combined aggregate gradation samples for well-graded aggregate on a lot basis representing one day's paving. The lot will represent the cumulative average of the sublot values on each sieve for the gradation band or the cumulative average of the sublot values of the coarseness factor and workability factor for the coarseness factor chart.

An optional incentive is available to the Contractor provided a concrete mixture is designed and produced with a well-graded aggregate gradation that meets one of the following in accordance with Table 2301-11. The Contractor may achieve only one of the optional incentives for any single lot.

TABLE 2301-11
Well-Graded Aggregate Optional Incentive

Gradation Options	Payment incentive/disincentive per cu. yard [cu. m]
8-18 Retained	$2.00 per cubic yard ($2.60 per m^3)
7-18 Retained	$0.50 per cubic yard ($0.65/m^3)
Gradation Zone II-A	$2.00 per cubic yard ($2.60 per m^3)

The Engineer will use the Contractor's combined aggregate gradation test results, as verified by Department testing, to determine compliance.

E Reinforcement Bars 3301
F Dowel Bars 3302
G Concrete Joint Sealers
G.1 Preformed Type 3721
G.2 Hot-poured, Elastic Type 3725
G.3 Silicone Type 3722
H Preformed Joint Filler 3702
I Curing Materials
I.1 Burlap Curing Blankets 3751
I.2 Poly-Alpha Methylstyrene (AMS) Membrane Curing Compound 3754
I.3 Linseed Oil Membrane Curing Compound 3755
I.4 Plastic Curing Blankets 3756
J Form Coating Material 3902

2301.3 CONSTRUCTION REQUIREMENTS

Use "slipform" as the standard construction method for concrete paving, unless otherwise specified in the Contract or allowed by the Engineer.

A.1 High-Early Strength Sections

For early use of the pavement as required by the Engineer, construct a section of pavement of high-early strength concrete in accordance with 2301.2.D, "Concrete Mix Design Requirements" at important road crossings, intersections, driveway entrances, or other locations as shown on the Plans or directed by the Engineer. Take precautions to satisfactorily finish, cure, and protect high-early strength concrete pavements.

A.2 Operation and Supervision

Notify the Engineer at least 24 h before placing concrete to allow for inspection. Do not place concrete until the Engineer approves preparations for concrete placement. If the Contractor fails to notify the Engineer at least 24 h before concrete placement, the Engineer may not allow concrete placement in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work."

Provide paving operations supervision in accordance with 1506, "Supervision by Contractor." Provide an organizational chart listing names and phone numbers of individuals and alternates responsible for mix design, quality control administration, and inspection to the Engineer. Post the organizational chart in the Contractor's on-site facility.

Provide a manufacturer's manual explaining the operation and adjustments of the major pieces of power operated equipment used.

A.3 Plant Certification

Provide notice 16 hrs in advance of concrete paving production and in conjunction with the Engineer, perform a thorough on-site inspection of the concrete plant and complete MnDOT Form 2164, "Concrete Paving Plant Contact Report." Sign the report to certify compliance with the paving requirements and to certify review of the continual maintenance of the plant.

Calibrate and correlate the testing equipment in accordance with 2461.

A.3.a Combination Plant Lab – Office Requirements

The Concrete Paving Contractor QC technicians and the Department QA technicians will equally share a combination plant lab – office during concrete paving.

For concrete paving projects in accordance with 2301.2.D.2, provide a separate combination plant lab – office in accordance with 1604, "Plant Inspection – Commercial Facility," except as modified by the following characteristics and requirements:

(1) Located at the plant site within 100 yd [91 m] from the batch plant or other location, as approved by the Engineer,
(2) Plant lab and plant office areas separated and isolated by a wall,
(3) Total plant lab-office floor area, based on exterior dimensions, of at least 224 sq. ft [21 sq. m],
(4) Plant lab floor area, based on exterior dimensions, of at least 144 sq. ft [13.5 sq. m],
(5) Plant office floor area, based on exterior dimensions, of at least 80 sq. ft [7.5 sq. m],
(6) Heating and cooling system capable of maintaining a uniform temperature between 72° and 85° F [22° and 29° C],
(7) Drinking water container or cooler with adequate supply of potable water,
(8) Detached portable toilet conveniently located,
(9) Electrical power supply that provides adequate amperage for all electrical needs,
(10) Water supply (storage tank with a capacity of 50 gal or more, or pressurized water supply) connected to the sink faucet,
(11) Provide a sample storage area to prevent contamination of the samples,
(12) Plant lab furnished in accordance with the following:
  (12.1) One sturdily built workbench or countertop at least 30 in × 144 in [0.75 m × 3.65 m],
  (12.2) One service sink located near one end of the workbench with a water supply, faucet and an outside drain,
  (12.3) Shelf space above workbench or countertop or at other convenient locations, totaling at least 8 linear ft [2.5 m] × 8 in [0.2 m],
  (12.4) Electronic scales of sufficient size to weigh the samples for all required materials testing, and
  (12.5) A four burner 30" standard electric stove top or stove and at least two additional electric burners to perform required aggregate testing per the Schedule of Materials Control.
  (12.6) Microwave oven with turntable or wave deflection fan (900 Watt), heat resistant glass pan (approx. 9"x9"x2"), plain weave fiberglass cloth (10 oz/yd^2 and 14 mills thick), metal scrapper and grinding pestle,
  (12.7) Metal bowls of sufficient size to perform all required material testing,
(13) Plant office furnished in accordance with the following:
  (13.1) Two desks, one for the Department and one for the Contractor, with total exterior dimensions of at least 30 in × 60 in [¾ m × 1.50 m],
  (13.2) At least four (4) chairs,
  (13.3 A telephone capable of providing email, and
  (13.4) A printer with scanning and copying capabilities.

For concrete paving projects supplied by a Certified Ready-Mix Plant, the separate Combination Plant - Lab Office requirements of 2301.2.A.3.a do not apply with the exception of the following:

(1) Electrical power supply that provides adequate amperage for all electrical needs,
(2) Water supply (storage tank with a capacity of 50 gal or more, or pressurized water supply) connected to the sink faucet,
(3) Electronic scales of sufficient size to weigh the samples for all required materials testing, and
(4) At least six (6) electric burners to perform required aggregate testing per the Schedule of Materials Control.
(5) Metal bowls of sufficient size to perform all required material testing,
(6) If w/c incentives apply, provide a microwave oven with turntable or wave deflection fan (900 Watt), heat resistant glass pan (approx. 9"x9"x2"), plain weave fiberglass cloth (10 oz/yd^2 and 14 mills thick), metal scrapper and grinding pestle,

Do not begin concrete paving operations until the Engineer approves the combination plant lab–office. The Contract square yard [square meter] price for *Concrete Pavement* includes the cost of the plant lab-office.

A.4 Sampling and Testing

Provide a MnDOT Certified Concrete Plant Level 2 Technician to oversee testing and plant operations and to remain on-site during concrete production or have cellular phone availability.

Provide technicians with certification at least meeting MnDOT Concrete Plant Level 1 to perform all of the duties in accordance with the MnDOT Concrete Manual. The Engineer will provide technicians with certification at least meeting MnDOT Concrete Plant Level 1 to perform all of the duties in accordance with the MnDOT Concrete Manual.

Performs testing in accordance with the MnDOT Concrete Manual and determines testing rates meeting the requirements of the Schedule of Materials Control. The Engineer performs testing in accordance with the MnDOT Concrete Manual and determines testing rates meeting the requirements of the Schedule of Materials Control.

Take samples randomly using ASTM D 3665, Section 5.

Take samples in accordance with the 2011 Schedule of Materials Control except as modified in the following tables below:

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

Concrete Pavement - Concrete Plant Production

<table>
<tr><th>Pay Item No.</th><th>Test Type</th><th>Spec. No.</th><th colspan="2">Producer/Contractor Testing</th><th colspan="2">Agency Testing</th><th>Form No.</th></tr>
<tr><td rowspan="3">2301</td><td rowspan="3">Gradation Testing (QC/QA) (5-694.145 and 5-694.148)</td><td rowspan="3">3126
3137</td><td><u>For a concrete paving batch plant:</u>

1 per 1200 m^3 (1500 yd^3) or completed 1 per ½ day, whichever results in the highest sampling rate.</td><td><u>For a certified ready-mix plant:</u>

1 per 400 m^3 (yd^3) or completed every 4 hours, whichever results in the highest sampling rate.</td><td colspan="2">Test the first 4 QA samples of production each time the Contractor mobilizes the plant or changes aggregate sources.</td><td rowspan="3">21764 Concrete Aggregate Worksheet JMF

Well-graded Concrete Aggregate Worksheet</td></tr>
<tr><td colspan="2"></td><td><u>For a concrete paving batch plant:</u>

1 per day on randomly selected samples thereafter.</td><td><u>For a certified ready-mix plant:</u>

1 per 1000 m^3 (1000 yd^3) or 1 per week, whichever results in highest sampling rate on randomly selected samples thereafter.</td></tr>
<tr><td colspan="2">Performing testing on representative material at the end of the most recent day of production is allowed.

If well-graded aggregate incentives apply: Use the Contractor's gradation results for well-graded aggregate incentive calculations as verified by Agency testing</td><td colspan="2">Identify the gradation samples with "QA Gradation" on the Sample ID Card and include the JMF Number and the QC Gradation results.

If Coarse Aggregate Quality Incentive/Disincentives apply: The Agency may also use the QA gradation sample for the Coarse Aggregate Quality incentive/disincentive testing. In this case, notify the Producer/Contractor to double the QC/QA gradation sample size.</td></tr>
</table>

<table>
<tr><th colspan="7">Concrete Pavement - Concrete Plant Production</th></tr>
<tr><th>Pay Item No.</th><th>Test Type</th><th>Spec. No.</th><th colspan="2">Producer/Contractor Testing</th><th colspan="2">Agency Testing</th><th>Form No.</th></tr>
<tr><td rowspan="2">2301</td><td rowspan="2">Coarse Aggregate Testing on -75 µm (#200) (QC/QA) (5-694.146)</td><td rowspan="2">3137</td><td colspan="2" rowspan="2">Starting on the first day of production and each time the Contractor mobilizes the plant, changes aggregate sources, or the cleanliness of the coarse aggregate is in question: test the first sample and then at least 1 of the next 3 samples.

1 test per day thereafter

Test these samples at the plant.</td><td colspan="2">1 randomly selected sample on the first day of production and each time the Contractor mobilizes the plant, changes aggregate sources, or the cleanliness of the coarse aggregate is in question.

Test these samples at the plant.</td><td>21764 Concrete Aggregate Worksheet JMF</td></tr>
<tr><td><u>For a concrete paving batch plant:</u>
1 test per week thereafter</td><td><u>For a certified ready-mix plant:</u>
1 per 1000 m^3 (1000 yd^3) or 1 per week, whichever results in highest sampling rate on randomly selected samples thereafter.</td><td></td></tr>
<tr><td rowspan="2">Aggregate Moisture Testing (QC/Verification) (5-694.142)</td><td rowspan="2"></td><td><u>For a concrete paving batch plant:</u>

If w/c incentives do not apply:
1 per 750 m^3 (1000 yd^3) or completed every 4 hours, whichever results in the highest sampling rate.</td><td><u>For a certified ready-mix plant:</u>

If w/c incentives do not apply:
1 per 200 m^3 (200 yd^3) or completed every 4 hours, whichever results in the highest sampling rate</td><td><u>For a concrete paving batch plant:</u>

If w/c incentives apply:
1 per 750 m^3 (1000 yd^3) or completed every 4 hours, whichever results in the highest sampling rate.

Take initial samples for aggregate moisture testing within the first 175 m^3 (250 yd^3).</td><td><u>For a certified ready-mix plant:</u>

If w/c incentives apply:
1 per 200 m^3 (200 yd^3) or completed every 4 hours, whichever results in the highest sampling rate.

Take initial samples for aggregate moisture testing within the first 75 m^3 (100 yd^3).</td><td>Concrete W/C Ratio Calculation Worksheet</td></tr>
</table>

Concrete Pavement - Concrete Plant Production					
Pay Item No.	**Test Type**	**Spec. No.**	**Producer/Contractor Testing**	**Agency Testing**	**Form No.**
	Aggregate Moisture Testing (QC/Verification) **(5-694.142)** **CONTINUED FROM PREVIOUS PAGE**		Complete the initial moisture content and adjust the batch water prior to the start of concrete production each day. If weather conditions allow, performing moisture testing on representative material at the end of production the prior evening is allowed.	**If w/c incentives apply:** Use aggregate moisture results for determining the water content to calculate the w/c ratio incentive/disincentive. **Do not leave samples unattended.**	
2301	Water Content Verification Testing **(Microwave Oven Verification) (5-694.532)**	2301	Obtain the plastic concrete sample at the plant.	**If w/c incentives apply:** Microwave oven verification testing to verify the w/c ratio is completed in conjunction with Agency aggregate moisture testing. **Do not leave samples unattended.** **<u>For a concrete paving batch plant:</u>** Take initial sample for microwave oven verification testing within the first 175 m^3 (250 yd^3). At least one additional verification test should be taken if more than 750 m^3 (1000 yd^3) is produced in a day. **<u>For a certified ready-mix plant:</u>** Take initial sample for microwave oven verification testing within the first 75 m^3 (100 yd^3). At least one additional verification test should be taken if more than 400 m^3 (400 yd^3) is produced in a day.	Concrete W/C Ratio Calculation Worksheet

A.5 Contractor Charting

Maintain and keep control charts current. Provide and display easily readable sized charts on the testing facility wall or store in a 3-ring binder. Plot the following information on control charts using a method approved by the Engineer:

(1) Composite gradation,
(2) Air content (QC and QA),
(3) Moisture content of aggregates, and
(4) Water/cement ratio.

Also include the following information on the charts:

(1) Date,
(2) Time,
(3) Lot and sublot,
(4) Admixture dosage adjustments, and
(5) Other data necessary to facilitate control of the process.

Provide all reports, records, and diaries developed during the progress of construction activities to the Engineer. Provide all batch tickets and test results to the Engineer on a daily basis. The Engineer may suspend plant operations if the Contractor fails to provide daily test results.

A.6 MIT-SCAN T2 Non-Destructive Testing Device

The Contractor shall furnish a MIT-SCAN T2 non-destructive testing device having the ability to measure the location of concrete reinforcement, dowel bars and concrete pavement thickness in a single device. Agency and Contractor personnel shall mutually use this non-destructive testing device several times a day during concrete pavement construction. Agency observations do not relieve the Contractor of the requirement to properly place the concrete reinforcement and dowel bars as shown in the plans. In addition, the Department reserves the right to reject the pavement in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work."

The Engineer will not provide additional payment for furnishing the above equipment for the Department's use.

B Subgrade and Aggregate Base Preparations

Prepare the subgrade and aggregate base in accordance with 2112 and 2211 and the following:

Fine grade the aggregate base to the required shape and grade as shown in the plans, allowing construction of the pavement to the specified thickness and cross section as shown in the plans. Use an approved fine grading machine mounted on crawler tracks.

Shape and maintain the shoulders to allow surface water to drain away from the pavement and off the shoulders.

C Setting Forms

Provide forms meeting the following requirements and characteristics:

(1) Steel, straight edge sides,
(2) Depth equal to the specified pavement thickness,
(3) Smooth and free of localized indentations and deformities,
(4) Top face with deviations no greater than ⅛ in [3 mm] in any 10 ft [3 m] section,
(5) Faces of straight forms with deviations no greater than ¼ in [13 mm] in any 10 ft [3 m] section,
(6) Side forms containing no bends or damaged sides,
(7) Forms containing no damaged joint locks or pin pockets, and
(8) Form lengths at least 10 ft [3 m] long with horizontal joint and base width equal to the depth of the forms.

For pavements with radii no greater than 100 ft [30 m], use flexible or curved forms approved by the Engineer. Provide devices to securely set forms and withstand operation of the paving equipment without springing, settlement, or lateral displacement. Provide forms with joint locks to tightly join ends of abutting form sections together. Connect individual form sections using methods creating a continuous form.

Set the forms to the proper alignment and grade as shown in the Plans for a distance equal to at least 3 h ahead of concrete placement.

Compact the foundation before placing the forms in accordance with 2301.3.B. Ensure the forms have a firm and uniform bearing over the entire base area, are tightly joined and securely staked, and are clean and free of

accumulations of hardened concrete. Coat the contact faces of the forms with an approved form coating material in accordance with 3902 before placing the concrete.

During a rain event, remove and reset the forms as necessary to allow drainage.

D Concrete Equipment and Paving Operations

Provide self-propelled spreading and finishing machines capable of consolidating and finishing the concrete, and producing a finished surface meeting the requirements specified.

D.1 Slipform Construction

Place concrete using a slipform paver or combination of pavers designed to spread, consolidate, screed, and float-finish the freshly placed concrete with minimum hand finishing. Provide a slipform paver with a non-oscillating extrusion plate with an adjustable angle of entry.

Place the concrete pavement prior to placing curb and gutter. If the sequence of operations includes placing the curb and gutter prior to the concrete pavement, submit a jointing plan to the Engineer for approval prior to placing the curb and gutter.

Consolidate the full width and depth of concrete pavement placed by a single pass of a series of internal vibrators. Operate full-width vibrators from 3,600 VPM [60 Hz] to 7,000 VPM [117 Hz] in concrete and from 4,150 VPM [70 Hz] to 8,000 VPM [133 Hz] when checked in air. Deliver the vibrator impulses directly to the concrete and operate at an intensity to consolidate the concrete uniformly throughout the entire depth and width of the concrete. The Contractor may increase the vibrator frequency as approved by the Engineer. Perform additional testing as required by the Engineer at no additional cost to the Department. If the vibrator fails, suspend operations and remove unconsolidated concrete.

Regulate the rate of progress of the vibratory equipment and the duration of the application to fully, but not excessively, vibrate the concrete. Suspend the operation of vibrators if the forward progress of the paver stops.

Attach vibrators to spreading or finishing equipment. Do not allow vibrators to come in contact with preset dowel basket assemblies, the grade, pavement reinforcement, or side forms. Do not allow the operation of vibrators to cause separation or segregation of the mix ingredients, including the downward displacement of large aggregate or the accumulation of laitance on the concrete surface. The Contractor may reduce the vibration frequency within the specified range if reducing the forward progress of the paver to avoid segregation of the concrete mix. Connect the power to all vibrators so that they cease when the machine motion is stopped. Stop paving operations if a vibrator fails to operate within the specified range.

Provide an electronic monitoring device meeting the following characteristics and requirements to display the operating frequency of each individual internal vibrator for concrete pavement placed by the slipform method:

(1) Contains a readout display near the operator's controls; visible to the paver operator and to the Engineer,
(2) Operates continuously as the paving machine operates,
(3) Displays all the vibrator frequencies with manual and automatic sequencing for each of the individual vibrators, and
(4) Records the following at least every 25 ft [7.62 m] of paving or at least every 5 min of time:
  (4.1) Clock time,
  (4.2) Station location,
  (4.3) Paver track speed, and
  (4.4) Operating frequency of individual vibrators.

Provide an electronic copy containing the record of data after the completion of the concrete paving operation. Provide vibration data daily as directed by the Engineer.

Operate the slipform paver with a continuous forward movement, and coordinate all operations of mixing, delivering, and spreading concrete to provide uniform progress with minimal stopping and starting of the paver.

Equip the paver with automatic grade control capable of maintaining both elevation and longitudinal line as shown in the Plans at both sides of the paver, by controlling the elevation of one side and controlling the crown, or by controlling the elevation of each side independently. Achieve the grade reference by means of an erected string line.

Tightly stretch a wire or string line set parallel to the established grade for the pavement surface to achieve the grade reference. Set the control reference and support the line at intervals to maintain the established grade and alignment.

D.2 Fixed Form Construction

Place concrete using one or more machines to spread, screed and consolidate between previously set side forms. Accomplish vibration of these areas using hand held or machine mounted internal vibrators.

If not using an electronic monitoring device, use a tachometer or similar device to demonstrate to the Engineer that the paving equipment vibration meets the requirements in this section.

Use hand held vibrators to consolidate concrete adjacent to side forms and fixed structures. Operate the hand held vibrators at a speed of at least 3,600 VPM [60 Hz]. Do not allow the vibrator head to contact the joints, load transfer devices, reinforcement, grade, or side forms. If the vibrator fails, suspend operations and remove unconsolidated concrete.

Continue vibration to achieve adequate consolidation, without segregation, for the full depth and width of the area placed.

Furnish an adequate number and capacity of machines to perform the work at a rate equal to the concrete delivery rate.

Strike-off concrete with a clary screed unless otherwise allowed by the Engineer. Finish small or irregular areas that are inaccessible to finishing equipment using other methods as approved by the Engineer.

Discontinue any operation that causes displacement of the side forms from the line or grade or causes undue delay, as determined by the Engineer, due to mechanical difficulties.

E Batching and Mixing

Batch and mix the concrete in accordance with 2461 and the following:

E.1 Batching Requirements

Perform the initial spot check of the measuring equipment in accordance with the MnDOT Concrete Manual for accuracy and sensitivity before starting production operations. Provide a copy of the inspection certificate to the Engineer.

Provide to the Engineer a computerized batch ticket that includes the following:

(1) Date,
(2) State project number (SP) or (SAP),
(3) Time concrete was batched,
(4) Quantity of concrete in this load,
(5) Running total of each type of concrete, each day for each project,
(6) Mix number,
(7) Labels identifying each material that correlates with the Contractor mix design, including cementitious and admixture abbreviations or MnDOT 5 digit pit numbers),
(8) Target weight of materials,
(9) Actual batched weights of materials,
(10) Temper water, and
(11) Total water weight.

Suspend batching and mixing operations if satisfactory finishing and curing of the pavement does not occur as determined by the Engineer..

E.2 Cement Cutoff and Yield

Submit the cement records to the Engineer. Make positive cement cutoffs, except if providing cement proportioned in a certified ready-mix plant, and delivering the batch to the construction site in truck mixers, in accordance with the following:

(1) Perform individual cement cutoffs at the following intervals:
  (1.1) After using 500,000 lb [250 tonne] of cement,
  (1.2) Before using 2,000,000 lb [1,000 tonne] of cement,
  (1.3) Using at least every 3,000,000 lb [1,500 tonne] or once a week, whichever provides the longer time interval between cutoffs.

(2) If delivering bulk cement directly to the concrete batching plant in railroad cars or sealed transport trucks, submit copies of the freight bills to the Engineer on the same day received from the transporting company.

(3) Advise the Engineer of the method and schedule of cement unloading. Do not unload cement until the Engineer approves the operation.

The Engineer will verify the following:

(1) Individual cutoffs do not show an underrun in cement usage greater than 1.5 percent of the quantity specified, and

(2) The final cutoff does not show an overall underrun greater than 1.0 percent.

(3) If either one or both of these limitations are exceeded, the Engineer will not pay for the concrete represented at the Contract unit bid prices.

The Engineer may reject defective concrete in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work," or the Department may pay for the defective concrete at an adjusted unit price at the same ratio to the Contract unit price as the quantity of cement used to the quantity of cement required less the allowable underrun. If the cement exceeds the limitations for individual cutoff and final cutoff, the Department may apply the price adjustment to the cutoff value that produces the greatest monetary deduction.

F Placing Concrete

Dump or discharge concrete without causing grade displacement or damage to the existing asphalt or bond breaker layer. Repair damage to the grade, existing asphalt, or bond breaker layer as approved by the Engineer, at no cost to the Department. Provide protection for turning concrete trucks.

Maintain the grade in a moist condition until placement of concrete.

Construct mainline pavement in a single layer of concrete. Place the concrete pavement in one complete pass of the paving machine to minimize the need for hand finishing.

Coordinate paving operations for mixing, delivering, spreading, and extruding the concrete to provide uniform progress of the paver. Use sufficient trucks to ensure a steady forward progress of the paver. If the forward movement of the paver stops for a period long enough to create a cold joint or honeycombing, construct a header joint in accordance with 2301.3.H.3.

Do not add water to the surface of the concrete to aid in finishing without the approval of the Engineer.

When placing concrete on asphalt or asphalt bond breakers comply with the following:

(1) Do not place concrete on an asphalt surface with an asphalt surface temperature greater than 120° F [50° C].

(2) Maintain the asphalt surface in a moist condition as necessary and at a surface temperature not greater than 120° F [50° C] before placing the concrete.
(3) The Engineer will allow the Contractor to apply water and/or a whitewash of hydrated lime and water to cool the asphalt surface or other methods allowed by the Engineer.
(4) Before placing concrete on a milled asphalt surface, clean the milled surface by sweeping, and patch as shown in the Plans in accordance with 2231or as required by the Engineer.

When placing concrete adjacent to in-place concrete pavement, protect the following:

(1) All ends of transverse joints 3/16 in [5 mm] or wider to the satisfaction of the Engineer. The Engineer will allow sawing through the existing joint when sawing the newly placed concrete, and
(2) The in-place pavement to prevent damage.

Do not allow the edges of the pavement, including longitudinal joints, to deviate from the line shown on the Plans by greater than ½ in [13 mm] at any point.

Set manhole and catch basin frames or rings to the required elevation during the paving operations.

F.1 Consistency

For slipform concrete pavement placement, place the concrete with a slump value that optimizes placement, except ensure the concrete does not slough or slump and is adequately consolidated and meets all other requirements. Maintain the concrete at a uniform consistency. The Engineer will not allow an edge slump greater than ⅛ in [3 mm] or irregular edge alignment.

For fixed form placement, place the concrete with a slump no greater than the maximum allowable slump in accordance with 2461.4A4a.

F.2 Air Content

Maintain the air content of Type 3 paving concrete at the specified target of 7.0 percent ±1.5 percent of the measured volume of the plastic concrete in accordance 1503.

Make any adjustments immediately to maintain the desired air content.

Measure the air content after placement on the grade but before consolidation.

If using the slipform paving method, establish an air loss correction factor (ACF) to determine the air content after consolidation once per half day of paving. Apply the ACF to tests taken before consolidation to estimate the air content after consolidation. Place concrete with an air content of at least 5.0 percent after consolidation.

Take the following actions for the following air content test results with the ACF applied or a test taken after consolidation:

(1) A single test (QC or QA) from 5.0 percent to 5.5 percent, adjust the mix design to obtain an air content greater than 5.5 percent without stopping production,
(2) Two consecutive tests (QC or QA) from 5.0 percent to 5.5 percent, make immediate adjustments to obtain an air content greater than 5.5 percent or stop production. Test every truck until the air content test results meet the requirements. Test at least three additional trucks after obtaining the correct air content.
(3) Any test (QC or QA) less than 5.0 percent, make immediate adjustments to obtain an air content greater than 5.5 percent or stop production. Test every truck until the air content meets the requirements. Test at least three additional trucks to ensure the concrete remains within compliance. Perform additional testing on the hardened concrete as required by the Engineer in conjunction with the Concrete Engineer.

F.2.a Non-Conforming Material

Only place Type 3 concrete meeting the air content requirements in the work. If the Contractor places Type 3 concrete not meeting the air content requirements into the work, the Engineer will not accept nonconforming concrete at the Contract unit price. For concrete not meeting the required air content, the Engineer will make determinations regarding the disposition, payment, or removal. The Department will adjust the Contract unit price for the Contract pay item of the concrete in accordance with Table 2301-12. When there is not a separate Structural Concrete bid price for an item of work, the Department will reduce payment based on a concrete price of $60.00 per cu. yd [$78.00 per cu. m] or the Contractor-provided invoice amount for the concrete in question, whichever is less.

Table 2301-12
Paving Concrete

Air Content Before Consolidation, %	Adjusted Contract Unit Price
>10.5	The Department will pay 75 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer.
>8.5 – ≤10.5	The Department will pay 95 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer
5.5 – 8.5	The Department will pay 100 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer
>4.5 – <5.5	The Department will pay 75 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer
>4.0 – ≤4.5	The Department will pay 25 percent of the Contract unit price for the concrete represented and placed as approved by the Engineer. If the Engineer, in conjunction with the Concrete Engineer, determines the surface is exposed to freeze-thaw cycling, coat the concrete with an approved epoxy penetrant sealer from the MnDOT Approved Products list.
≤ 4.0	Remove and replace concrete in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work" as directed by the Engineer. If the Engineer, in conjunction with the Concrete Engineer, determines the concrete can remain place, the Engineer will not pay for the concrete and if the Engineer determines the surface is exposed to salt-brine freeze-thaw cycling, coat with an approved epoxy penetrant sealer from the MnDOT Approved Products list.

G Placing Reinforcement

Provide and place reinforcement meeting the following requirements and characteristics:

(1) Provide epoxy coated reinforcement in accordance with 2472.
(2) Provide and place reinforcement bars including keyway bars, tie bars, taper steel, and stopper bars.
(3) Place keyways as shown on the plans.
(4) Provide and place supplemental pavement reinforcement as shown on the plans.
(5) Provide and place reinforcement bars on chairs, in stakes, utilizing tie bar basket assemblies or by appropriate equipment for depressing the bars to the specified location.
(6) For slipform paving, stake the tie bar steel to the roadbed, or use a mechanical device attached to the spreader or paver to place tie bar steel required for L1T joints as shown on the plans. Space and depress the tie bar steel to the desired depth and location as shown on the plans. Do not place tie bars over a dowel bar assembly.

H Joint Construction

Unless otherwise shown on the plans, construct all joints perpendicular to the grade. Place dowel bars parallel to the grade and parallel to the centerline of the pavement.

H.1 Dowel Bar Placement

Provide dowel bar assemblies manufactured in single units for the lane widths as shown on the plans, unless otherwise approved by the Engineer. Do not use more than two assembled sections in any one joint for ramps, loops, and tapered sections.

Secure the dowel bar assemblies to prevent movement during concrete placement in accordance with MnDOT Standard Plate 1103 and the following:

(1) If placing dowel bar assemblies on asphalt or asphalt bond breaker layers, secure the assemblies with at least seven anchorage points. Place four of the anchorage points on the assembly side facing the front of the paver. Fasten the assemblies in accordance with the following:
  (1.1) Place pins or fasteners of sufficient length and shank diameter of at least 0.177 in [0.45 cm] to penetrate through the asphalt bond breaker layer and into the concrete at least 1 in [25 mm] or at least 2 in [50 mm] into the in-place asphalt layer,
  (1.2) Before paving, demonstrate the fastening method to the Engineer for approval.

Within 1 h before covering with concrete, coat the dowel bars with a thin uniform coating of an approved form coating material in accordance with 3902 and listed on the MnDOT Approved Products List.

Before placing the concrete, mark the location on both sides of each transverse joint as approved by the Engineer. Transfer the markings to the fresh concrete immediately after completing the final finishing operations.

The Contractor may use a mechanical dowel bar inserter to place dowel bars in the pavement as approved by the Engineer, in conjunction with the Concrete Engineer. Immediately before inserting the dowels, coat the dowels with a thin uniform coating of an approved form coating material in accordance with 3902 and listed on the MnDOT Approved Products List. If using a dowel bar inserter, initially and on each production day, demonstrate to the Engineer that the inserted dowel bars in the completed concrete pavement are parallel to the surface and centerline slab and are located at mid depth of the slab thickness.

H.1.a Quality Control Plan for Dowel Basket Assemblies

Provide a Quality Control Plan in writing to the Engineer for acceptance that provides a method for keeping the dowel basket assemblies anchored to the existing asphalt or bond breaker layer and into the underlying concrete. The Quality Control Plan shall include the following at a minimum:

(1) Proposed type and number of fasteners
(2) Dowel basket assembly anchoring plan (ie. Anchored all basket assemblies prior to concrete placement, one lane at a time, anchor all basket assemblies during the concrete placement operation, etc.)
(3) Procedure if assemblies do not hold with the proposed method
(4) Sampling rate for locating basket assemblies with the MIT-SCAN T2

H.2 Joint Establishment

Space contraction joints at the intervals shown on the plans, except shorten the spacing at the following to provide panel lengths at least 5 ft [1.5 m]:

(1) Adjacent to header joints,
(2) Reinforced panels,
(3) Railroad grade crossings, and
(4) Free ends of pavement.

Provide either wet-cut saws referred to as "conventional concrete saws" or lighter weight dry-cut saws referred to as "early-entry concrete saws" capable of establishing joints sooner than the conventional saws.

Provide initial joint sawing as shown on the plans. Perform the initial sawing as soon as the concrete will support the joint sawing operation without raveling and before random cracking occurs.

Immediately after completing the joint sawing, use water under nozzle pressure to remove the sawing residue from each joint and the pavement surface.

If widening is necessary, do not widen the joints to full width until the concrete is at least 24 h old or longer if the sawing causes raveling of the concrete.

Stake preformed joint filler material for expansion joints in place to maintain proper position as shown on the Plans during concrete placement.

Extend transverse joints constructed in the pavement through the integrant curb.

H.3 Constructing Headers

Construct construction headers, temporary headers, and permanent headers as shown on the plans.

The Engineer will not allow incorporating any concrete accumulated in the grout box of the paver into the pavement. Construct all headers such that the concrete contained in the grout box is removed from the Project. Use any approved construction header method as shown in the Standard Details.

Use internal vibration to consolidate the concrete along header joints before final finishing.

I Surface Finishing

Use a ⅜ in [10 mm] radius edging tool to finish edges of the pavement.

After consolidating, screeding, and floating the concrete, give the pavement surface a final finish texture in accordance with 2301.3.I.1, "Pavement Texture" unless 2301.3.I.2, "Pavement Tining" is required in the Contract.

I.1 Pavement Texture

Test the adequacy of the pavement skid resistance meeting the requirements of ASTM E 965-87, "Test Method for Measuring Surface Macrotexture Depth Using a Sand Volumetric Technique." Provide a texture depth of at least $^{1}/_{25}$ in [1.00 mm].

The Department defines a lot as pavement of a single lane. Establish a separate lot for each lane on the Project.

The Department defines a sublot as the rate at which an individual measurement is taken over a given length. The Department considers a sublot as one lane wide, measured in accordance with the following:

(1) From the pavement edge to the adjacent longitudinal joint,
(2) From one longitudinal joint to the next, or
(3) In the absence of a longitudinal joint, between pavement edges.
(4) Each ramp and loop 18' (5.5 m) wide or less is considered a single lane.

The Engineer will break lots into sublots representing 1,000 linear ft [300 m] of pavement. Test the pavement surface at a point located transversely in the outside wheel path as determined by the Engineer. Test adjoining driving lanes at the same location. The Engineer will determine the locations using a random number multiplied by length of the sublot. If the Project or individual lane results in less than three sublots, the Engineer will divide the Project or individual lane lot into three sublots of equal length.

Complete surface texture testing no later than 24 hours after pavement placement unless otherwise approved by the Engineer. Refer to Table 2301-13for the acceptance criteria of texture depths below the specification limits.

Table 2301-13 Pavement Texture Depth	
Texture Depth Test Results for Individual Tests	**Acceptance Criteria**
$< {}^{1}/_{25}$ in to $\geq {}^{1}/_{32}$ in [< 1.00 mm to ≥ 0.80 mm]	The Engineer will accept the work if the Contractor amends the operation to achieve the required depth of at least $ {}^{1}/_{25}$ in [1.00 mm] as approved by the Engineer. If the Contractor fails to correct the operation, the Engineer will suspend the paving operation until corrections produce the required results.
$< {}^{1}/_{32}$ in [< 0.80 mm]	Perform concrete grinding of the pavement represented by this test to attain the necessary texture of $ {}^{1}/_{25}$ in [1.00 mm] as required by the Engineer.

Run additional tests at 100 ft [30 m] intervals before and after the failing test location to determine the limits of any individual failing test.

I.2 Pavement Tining

Pull a carpet drag longitudinally along the pavement before the concrete attains its initial set to obtain the final finish. Mount the drag on a bridge. Provide a drag with the following dimensions:

(1) As wide as the concrete placed, and
(2) Longitudinal length with sufficient surface contact to produce a texture approved by the Engineer.

Provide an artificial grass type carpeting for the carpet drag meeting the following characteristics and requirements:

(1) Molded polyethylene pile face,
(2) Blade length from ⅝ in to 1 in [15 mm to 25 mm], and
(3) Total weight of at least 70 oz per sq. yd [2.35 kg per sq. m].

Provide a backing made of a strong, durable material not subject to rot with the backing adequately bonded to the facing to withstand the specified use.

Immediately after carpet dragging the pavement surface, use a mechanized device providing a randomized tine spacing from ⅝ in to 1 in [16 mm to 26 mm] to apply a transverse metal-tine texture to the pavement meeting the following dimensions:

(1) Width from ½ in to ⅛ in [2 mm to 3 mm] and
(2) Depth from ⅛ in to $ {}^{5}/_{16}$ in [3 mm to 8 mm].

Do not dislodge coarse aggregate particles. The Contractor may use manual methods to achieve similar results on ramps and other locations as approved by the Engineer. The Contractor may use other texturing equipment to obtain an equivalent texture as approved by the Engineer.

The Engineer will not require metal-tine texturing on subsidiary paving areas such as cross-overs and parking lanes exempted by the Engineer, or on areas with speed limits no greater than 35 mph [55 km/h] as specifically exempted by the Contract or the Engineer.

J Concrete Curing and Protection

After completing final finishing operations, cure all exposed concrete surfaces. Use one of the following curing methods:

(1) Place the membrane curing compound conforming to 3754 or 3755 within 30 minutes of concrete placement or once the bleed water has dissipated unless otherwise directed by the Engineer in accordance with 2301.3.J.1.a. Place the membrane curing compound on the edges within 30

minutes after permanent removal of the forms or curing blankets unless otherwise specified in the Contract.

(2) Place plastic curing blankets or completely saturated burlap curing blankets as soon as practical without marring the surface in accordance with 2301.3.J.1.b..

Whenever weather conditions are such as to cause unusual or adverse placing and finishing conditions or equipment failures occur, expedite the application of a curing method or temporarily suspend the mixing and placing operations, as the conditions require.

If necessary to remove the coverings to saw joints or perform other required work, and if the Engineer approves, remove the covering for the minimum time required to complete that work.

Failure to comply with the above provisions will result in the Engineer, in conjunction with the Concrete Engineer, applying a monetary deduction in accordance with 1503. When there is not a separate Structural Concrete bid price for an item of work, the Department will apply a monetary deduction of $30.00 per cu. yd [$39.00 per cu. m] or 50% of the Contractor-provided invoice amount for the concrete in question, whichever is less.

J.1 Curing Methods

J.1.a Membrane Curing Method

Before application, agitate the curing compound as received in the shipping container to obtain a homogenous mixture. Protect membrane curing compounds from freezing before application. Handle and apply the membrane curing compound in accordance with the manufacturer's recommendations.

Apply the curing compound in accordance with the following:

(1) At a rate of 1 gal per 150 sq. ft (1 L per 4 m^2) of surface curing area.
(2) Apply curing compound homogeneously to provide a uniform, solid, white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper). If using a Department - approved curing compound with a non-white base color, apply the compound to provide a uniform, solid, opaque consistency meeting the intent of the requirement in this section.
(3) If the curing compound is damaged during the curing period, immediately repair the damaged area by re-spraying.
(4) If the Engineer determines that the initial or corrective spraying result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method at no additional cost to the Department.

Use the fully-automatic, self-propelled mechanical power sprayer approved by the Engineer to apply the curing compound in accordance with the following:

(1) Operate the equipment to direct the curing compound to the surface from two different lateral directions,
(2) Do not allow the sprayer to ride on the pavement surface,
(3) Ensure the sprayer covers the entire lane width and atomizes the curing compound, and
(4) If puddling, dripping, or non-uniform application occurs, suspend the operation to perform corrections as approved by the Engineer.

Use a fully-automatic, self-propelled mechanical power sprayer equipped with the following to apply curing compound as approved by the Engineer:

(1) A re-circulating bypass system that provides for continuous agitation of the reservoir material,
(2) Separate filters for the hose and nozzle,
(3) Check valve nozzles,
(4) Multiple or adjustable nozzle system that provides for variable spray patterns,
(5) A shield to control loss of material by wind action, and
(6) A spray bar drive system that operates independently of the wheels or track drive system.

The Engineer will permit an airless spraying machine for applying the curing compound on pavements that are 10 feet (**3 m**) or less in width and irregular shaped surfaces that comply with the following:

(1) A re-circulating bypass system that provides for continuous agitation of the reservoir material,
(2) Separate filters for the hose and nozzle, and
(3) Multiple or adjustable nozzle system that provides for variable spray patterns.

J.1.b Blanket Curing Method

After completion of the finishing operations and without marring the concrete, cover the concrete with curing blankets. Install in a manner that envelops the exposed concrete and prevents loss of water vapor. After the concrete has cured, apply membrane curing compound to the concrete surfaces that will remain exposed in the completed work.

J.2 Protection Against Rain

Protect the concrete from damage due to rain. Have available, near the site of the work, materials for protection of the edges and surface of concrete. Should any damage result, the Engineer will suspend operations until corrective action is taken and may subject the rain-damaged concrete to 1503 and 1512.

J.3 Protection Against Cold Weather

If the national weather service forecast for the construction area predicts air temperatures of 36 °F [1 °C] or less within the next 24 h and the Contractor wishes to place concrete, submit a cold weather protection plan.

Protect the concrete from damage including freezing due to cold weather. Should any damage result, the Engineer will suspend operations until corrective action is taken and may subject the damaged concrete to 1503 and 1512.

J.3.a Cold Weather Protection Plan

Submit a proposed time schedule and Plans for cold weather protection of concrete in writing to the Engineer for acceptance that provides provisions for adequately protecting the concrete during placement and curing. Do not place concrete until the Engineer accepts the Contractor's cold weather protection plans.

J.4 Vibratory and Backfilling Protection

Protect newly placed concrete from damage by adjacent vibratory or backfilling operations for a minimum of 24 hours. Resume vibratory and backfilling operations after the concrete has reached a minimum compressive strength of 2000 psi [13.7 MPa] or a flexural strength of 250 psi [1.7 MPa]. Cast concrete control specimens in accordance with 2461.4A5. The Engineer will test the control specimens. If the Engineer discovers evidence of damaged concrete, the Engineer will suspend work until the Contractor corrects the work. The Engineer may reject damaged concrete in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work."

The Contractor may use hand operated concrete consolidation equipment, walk behind vibratory plate compactors, rollers in "static" mode, and fine grading machines 24 h after placing the concrete, and other equipment as approved by the Engineer in conjunction with the Concrete Engineer.

K Removal of Forms

Do not remove side forms of pavement and back forms on integrant curb earlier than 12 h after placing the concrete, unless otherwise approved by the Engineer. Remove forms without exerting shock or strain, including temperature variations, on the pavement or curb. Cure concrete in accordance with 2301.3.J.1.a.

L Joint Sealing

Provide an approved sealant in accordance with 3725 and listed on the MnDOT Approved Products List, unless the type of sealant for contraction joints is otherwise specified in the Contract.

Do not seal joints with silicone in accordance with 3722 if the concrete mixture contains Class B coarse aggregate as defined in 3137.

Perform joint sealing as shown on the Plans and in accordance with the following:

(1) Seal joints after the Engineer inspects and approves the joints,
(2) Perform joint sealing on surface dry concrete after cleaning the joints of debris, dirt, dust, and other foreign matter, including accumulations of concrete,
(3) Lightly sandblast the joint walls before final compressed air cleaning,
(4) Immediately before sealing the joints, clean the joints with a jet of compressed air under pressure of at least 85 psi [580 kPa],
(5) Seal transverse integrant curb joints with the same joint sealer used to seal the pavement joints,
(6) Seal joints in accordance with the tolerances shown on the plans,
(7) Provide backer rod material compatible with the sealer as shown on the plans, and
(8) Remove and replace sealer at joints filled above the permissible level as shown on the Plans at no additional cost to the Department.

Handle and place joint sealer material as recommended by the manufacturer and in accordance with the following requirements:

L.1 Hot Poured Sealers

Heat hot poured sealers in a double-boiler type kettle or melter. Fill the space between inner and outer shells with oil or other material as allowed by the Manufacturer. Provide heating equipment with automatic temperature control, mechanical agitation, and recirculating pump. Use heating equipment as recommended by the manufacturer of the sealer material. Do not melt quantities of sealer material greater than the quantity used within the same day. After heating the sealer material to the application temperature, maintain the material temperature until placement. Place the sealer material within 4 h after the initial heating to the application temperature.

Apply sealant to the pavement at ambient pavement temperatures greater than 39° F [4° C].

L.2 Silicone Sealers

Install silicone sealers as recommended by the manufacturer.

L.3 Preformed Sealers

Provide preformed seals in one continuous length for each joint, except the Contractor may use butt splices in transverse joints at longitudinal joints.

Do not stretch the preformed sealer material in the installation process by greater than 5 percent of the joint length.

M Workmanship and Quality

M.1 Defective Pavement

The Department will pay for concrete pavement meeting the requirements and tolerances in accordance with this section at the Contract unit price. Pavement that fails to meet the minimum requirements when tested in the prescribed manner is considered defective. The Department may reject or adjust the payment for defective concrete pavement in accordance with 1503, "Conformity with Plans and Specifications" and 1512, "Unacceptable and Unauthorized Work."

The Engineer will determine the limits of each individual defective pavement area. If adjusting the price for defective payment, the Engineer will measure the area to the nearest whole square yard [square meter], except the Engineer will consider areas less than 1 sq. yd [1 sq. m] as 1 sq. yd [1 sq. m]. The Engineer will determine the condition of each individual defective area of pavement based on the calculation of greatest deficiency within that area.

M.2 Random or Uncontrolled Cracking

Repair or replace pavement with random or uncontrolled cracks as directed by the Engineer. If repairing the pavement as directed by the Engineer, use a dowel bar load transfer technique in accordance with the Department's Concrete Pavement Rehabilitation Details on the Department's website. Submit the intended repair technique to the Engineer for approval. Perform pavement repairs at no additional cost to the Department. If the

repair fails, replace the pavement at no additional cost to the Department. The Engineer will accept repairs in accordance with 1516, "Acceptance of Work."

M.3 Pavement Smoothness – IRI (International Roughness Index)

Provide concrete pavement smoothness in accordance with 2399.

N Thickness Requirements

Provide pavement with a finished pavement thickness as shown on the Plans or as modified, in writing, by the Engineer.

N.1 Procedure

Construct pavement to the thickness shown on the plans. On each Project and on each roadbed of a divided highway, evaluate pavement thickness in accordance with the following:

(1) Contractor Quality Control Probing (QCP),
(2) Probe Verification Core (PVC), and
(3) Quality Acceptance Core (QAC).

The Department defines plan thickness lot (PTL) as concrete pavement of the same thickness added together lineally. Establish a separate PTL for each concrete plan thickness on the Project.

The Department defines a sublot as the rate at which an individual measurement is taken over a given length. The Department considers a sublot as one lane wide, measured in accordance with the following:

(1) From the pavement edge to the adjacent longitudinal joint,
(2) From one longitudinal joint to the next, or
(3) In the absence of a longitudinal joint, between pavement edges.
(4) Each ramp and loop 18ft (5.5 m) wide or less is considered a single lane.

The Engineer will divide the PTL into sublots of 4,000 lineal lane ft [3,300 lineal lane m] to determine the QCP, PVC, and QAC locations. The Engineer will add partial sublots less than 2,000 ft [1,650m] to the previous lot. The Engineer will consider partial sublots equal to or greater than 2,000 lineal lane ft [1,650 lineal lane m] as individual sublots. If the PTL for the entire Project is less than 4,000 lineal lane ft [3,300 lineal lane m] the Engineer will consider the PTL as an individual sublot.

The Engineer will identify the QCP, PVC, and QAC thickness measurement locations in accordance with the following:

(1) Determine the longitudinal locations using random numbers multiplied by length of the sublot.
(2) Determine the transverse offset locations using a random number multiplied by the width of the traffic lane, ramp, or loop at the determined longitudinal location.
(3) Adjust the location to ensure the Contractor takes no measurements within 1 ft [0.3 m] of the pavement edge and takes no measurements within 2 ft [0.60 m] of any transverse or longitudinal joint or other obstructions.

N.2 Contractor Quality Control Probing (QCP)

Measure the pavement thickness of freshly finished concrete pavement at a rate of at least four QCP measurements per sublot. Notify the Engineer before performing probing thickness measurements in the plastic concrete so they may inspect or observe the Contractor's QCP tests during the paving operations.

Provide daily summary reports listing the results of the day's QCP thickness measurements and additional probing results to the Engineer.

N.3 Contractor QCP Probing Equipment and Probing Method

Provide the following equipment as approved by the Engineer to perform QCP probing:

(1) Probing rod meeting the following characteristics and requirements:
  (1.1) Non-flexing,
  (1.2) Length capable of completely penetrating the pavement for measuring,
  (1.3) Utilizes a circular or square top plate,
  (1.4) Contains a centrally located hole in the top plate with a diameter allowing for easy maneuvering along the length of the probing rod, and
  (1.5) Fitted with a locking device fixing the angle between the top plate and the probing rod at 90 degrees when locked.
(2) Base plate meeting the following characteristics and requirements:
  (2.1) 10.5 in [267 mm] square 26 gage galvanized steel plates or 11.8 in [295 mm] diameter 28 gage high strength steel circular plates or,
  (2.2) Rigid when in place, allowing the probing rod to be pushed against it without flexing, and
(3) Work bridge meeting the following characteristics and requirements:
  (3.1) Spans the full width of the freshly laid concrete,
  (3.2) Supports a person, and
  (3.3) Height above the concrete allows for the use of the probing device.
(4) Tape measure accurate to nearest ⅛ in [even mm] and with a length capable of measuring the depth of penetration of the probing device into the plastic concrete pavement.

Perform probing in accordance with the following:

(1) Place the base plates at the randomly selected locations and anchor the plates to prevent movement during concrete placement. Mark the locations of the base plates to ensure ease of locating the plates after the paver has passed,
(2) Position the bridge at the selected locations to reach and locate each point,
(3) Assemble the probing device. Keeping the probing rod perpendicular to the pavement surface, insert the rod into the plastic concrete until the rod strikes the base plate,
(4) Slide the top plate down the probing rod until it contacts the pavement surface, then lock to the probing rod,
(5) Withdraw the probing device, and
(6) Measure the length of the probing rod inserted into the plastic concrete from the underside of the top plate to the end of the probing rod. Record this measurement to the nearest ⅛ in [even mm].

N.4 Quality Acceptance Testing – Coring

The Engineer will measure the pavement thickness of concrete for each sublot in accordance with the following:

(1) Probe Verification Core (PVC), and
(2) Quality Acceptance Core (QAC).

The Engineer will mark one of every four QCP measurement locations per sublot for a PVC. The Engineer will mark one QAC per sublot. The Contractor will core at the designated PVC and QAC locations.

N.5 PVC and QAC Coring Method

(1) Begin coring on concrete older than 7 days, when the control beams attain a flexural strength in accordance with Table 2301-1, or when the control cylinders attain a compressive strength of 3,000 psi [20.6 MPa]. Use 3U18 concrete or another concrete mix approved by the Engineer to fill the core holes within 72 h of coring at no additional cost to the Department. Provide traffic control for coring;
(2) Cut 4 in [100 mm] nominal diameter cores at marked locations. Lay the cores next to the holes in a curing condition. Protect the cores. Do not submit cores out of round, not perpendicular, or containing ridges;
(3) The Engineer will field measure the core thickness to the nearest ⅛ in [even mm], verify (Field ID Number) the cores, and record the field measurement on MnDOT Form 24327, "Field Core Report" or a computerized spreadsheet available on the MnDOT Concrete Engineering website;

(4) Pick up the cores, accompanied by the Engineer. Store the cores in a water tank heated from 60° F to 80° F [15° C to 25° C] at the Department field office. The Engineer will not require the storage of cores in a curing condition for concrete older than 28 days;

(5) The Engineer will transport the cores in a curing condition, unless older than 28 days, to the MnDOT Office of Materials and Road Research; and

(6) The MnDOT Office of Materials and Road Research will determine the pavement thickness by measuring the length of the PVC and QAC cores in accordance with the procedure on file at the MnDOT Office of Materials and Road Research. Following this procedure, the MnDOT Office of Materials and Road Research will use nine probes interconnected in a hydraulic linkage to obtain the average length of the core in one operation. The MnDOT Office of Materials and Road Research will record the core length to the nearest 0.05 in [1 mm].

N.6 Non-conforming thickness

The Department will base acceptance of the pavement thickness and price adjustment for deficient thickness on the combination of both lab measured PVC and QAC coring.

The Department defines the tolerance limit for pavement thickness as the plan thickness lot (PTL) minus ½ in [13 mm]. If the QCP measurement shows a thickness deficiency greater than PTL minus ½ in [13 mm], take a core at the location of the deficient QCP. If any core thickness measurement (PVC or QAC) shows a thickness deficiency greater than PTL minus ½ in [13 mm], consider the pavement defective and take exploratory cores as directed by the Engineer.

The Department defines the defective pavement area as the entire area surrounding the deficient core within a traffic lane and between acceptable cores. The Department considers the pavement acceptable in the remaining areas as the increment where the cores show a thickness deficiency no greater than PTL minus ½ in [13 mm].

Take the first exploratory cores at any location within 10 ft [5 m] on each side of the deficient thickness location and at the same distance from the pavement centerline. Take an additional exploratory core in the adjacent traffic lane if the concrete was placed in the same operation. If the length of each of the first exploratory cores is at least equal to the PTL minus ½ in [13 mm], the Engineer will not require additional cores from this location. If any cores do not fall within the PTL minus ½ in [13 mm], take additional exploratory cores at 25 ft [10 m] intervals and at the same distance from the pavement centerline in the same lane as the original thickness measurement, as directed by the Engineer. Perform coring in the direction of the deficiency until obtaining a core with a length at least equal to the PTL minus ½ in [13 mm]. The Engineer will use exploratory cores to determine the extent of deficient pavement thickness for adjusting the unit bid price or requiring pavement removal and replacement.

For cores showing a pavement thickness greater than the PTL minus ½ in [13 mm] to 1 in [25 mm], the Contractor may choose one of the following:

(1) Remove and replace the defective pavement area, or

(2) Leave the pavement in place with a monetary deduction of $20 per sq. yd [$25 per sq. m] for the defective pavement area, as approved by the Engineer.

For cores showing a pavement thickness greater than PTL minus 1 in [25 mm], the Engineer, in conjunction with the Concrete Engineer, will determine whether the Contractor will remove and replace concrete pavement or leave the pavement in place at no cost to the Department and apply a monetary deduction of $20 per sq. yd [$25 per sq. m] for the defective pavement area in accordance with 1503.

The Engineer will use the PVC and QAC cores to determine the final average plan thickness lot (PTL), except for the following:

(1) If exploratory cores are taken to identify the defective pavement area, substitute the two outside exploratory cores that are within PTL minus ½ in [13 mm] for the deficient PVC or QAC.

(2) If the length of a PVC or QAC exceeds the by PTL plus 0.30 in [8 mm], the Engineer will limit the core length to the PTL plus 0.30 in [8 mm].

The Engineer will consider the pavement thickness as conforming provided the deficiency of the final average PTL does not exceed PTL minus 0.10 in [3 mm]. If the final average PTL is deficient by more than the PTL minus 0.10 in [3 mm], the Department will pay for the pavement in the PTL at the Contract unit price less the following monetary deductions in accordance with 1503 and Table 2301-14, excluding areas of defective pavement.

Table 2301-14
Deductions for Thickness Deficiencies

Thickness Deficiency Exceeding Permissible Deviations, *in [mm]*	Adjusted unit bid price per sq. yd [sq. m] of Payment
0.00 – ≤ 0.10 [≤ 3]	None (tolerance)
0.10 – ≤ 0.20 [3 – ≤ 5]	$0.20 [$0.25]
0.20 – ≤ 0.30 [5 – ≤ 8]	$0.40 [$0.50]
0.30 – ≤ 0.40 [8 – ≤ 10]	$0.70 [$0.90]
0.40 – ≤ 0.50 [10 – ≤ 13]	$1.00 [$1.25]
0.50 – ≤ 1.00 [13 – ≤ 25]*	$20.00 [$25.00]
* Perform exploratory coring as required by the Engineer.	

After Department thickness verification, the Department will test all of the cores for compressive strength at 60 days of age. The Department will test three of the cores from the entire Project for rapid chloride permeability (RCP) in lieu of compressive strength testing for information only.

O Opening Pavement to Traffic

Do not open a new pavement slab to general public traffic or operate paving or other heavy equipment on it until the concrete has attained an age of 7 days, or has reached a minimum flexural strength meeting the requirements of Table 2301-15 or minimum compressive strength of 3000 psi (**20.6 Mpa**), as approved by the Engineer. If the pavement joints are widened, seal the joints before operating paving or other heavy equipment and general public traffic on the pavement.

Cast the control specimens in accordance with 2461.4A5. Cure the control specimens in the same manner and under the same conditions as the pavement represented. The Engineer will test the control specimens in accordance with 2461.4A5.

Table 2301-15
Minimum Strength Requirements for Opening Pavements to Construction and to General Public Traffic

Slab Thickness, *in [mm]*	Flexural Strength, *psi [Mpa]*
≤7.0 [175]	500 [3.4]
7.5 [190]	480 [3.3]
8.0 [200]	460 [3.2]
8.5 [215]	440 [3.0]
9.0 [225]	390 [2.7]
≥ 9.5 [240]	350 [2.4]

Perform operations on new pavement as approved by the Engineer and in accordance with the following:

(1) Construct a ramp to prevent damage to the pavement slab when moving on and off the pavement,
(2) Operate the paving equipment on protective mats to prevent damage to the pavement surface and joints. Sweep the pavement surface free of debris before placing the protective mats, and
(3) Operate equipment on a slab without causing damage. If damage results, suspend operations and take corrective action as approved by the Engineer. Do not operate the equipment wheels or tracks within 4 in [100 mm] of the slab edge.

2301.4 METHOD OF MEASUREMENT

A Concrete Pavement

If the Contract includes the Contract item *Concrete Pavement*, the Engineer will measure in accordance with the following:

(1) Measure the concrete pavement placed to a uniform cross-section thickness by the surface area of the pavement as constructed, including integrant curb;
(2) Verify the pavement thickness based on the final measurement of cores;
(3) Include measurements for concrete pavement without regard to grade, strength, or type of concrete, width, or thickness of the pavement in a single measurement, except if the Plans include a Contract item for high-early strength concrete; and
(4) Apply incentive or disincentive for *Concrete Pavement* based on the theoretical volume of concrete used, by multiplying the measured square yard [square meter] of concrete by the thickness shown on the plans.

B Place Concrete Pavement

If the Contract includes the Contract item *Place Concrete Pavement*, the Engineer will measure in accordance with the following:

(1) Measure concrete pavement placed to a variable cross-section thickness by area based on specified dimensions, including integrant curb. This measurement will represent the surface area of the pavement as constructed; and
(2) Verify the pavement thickness based on the lab measured cores.

B.1 Structural Concrete

If the Contract includes the Contract item *Structural Concrete*, the Engineer will measure in accordance with the following:

(1) Measure structural concrete placed to a variable cross-section thickness by volume;
(2) Verify the volume measurements from the computerized batch ticket printouts from the plant, as verified by cement cutoffs and the consideration of any waste;
(3) Include the volume of all specified concrete pavements into a single item without regard to grade, strength, width, or thickness of the concrete pavement, except if the Plans include a Contract item for high-early strength concrete, and
(4) Apply incentives or disincentives for *Structural Concrete* based on the cubic yard [cubic meter].

C Supplemental Pavement Reinforcement

The Engineer will measure supplemental pavement reinforcement over culverts, storm sewers, and water mains, by weight.

D Expansion Joints

The Engineer will separately measure dowelled expansion joints of each design designation as shown on the Plans by length along the joint line.

E Reinforcement Bars

The Engineer will not separately measure keyway bars, tie bars, taper steel, stopper bars, and other reinforcement bars.

F Integrant Curb

The Engineer will separately measure integrant curb of each design by length.

G Dowel Bars

The Engineer will measure dowel bars by the actual number of individual dowels placed. The Engineer will not measure dowels included in the Contract linear foot [meter] price for *Dowelled Expansion Joints, Design ___*.

H Concrete Coring

The Engineer will not separately measure the number of cores taken, identified, and delivered as required by the Contract or directed by the Engineer.

2301.5 BASIS OF PAYMENT

A Concrete Pavement

Unless the Plans include a separate Contract item for work incidental to *Concrete Pavement*, the Contract square yard [square meter] price for *Concrete Pavement* includes the cost of constructing the pavement, including the cost of batch materials and mixing operations; plant lab-office; producing the concrete; fine grading; forming, including all headers; furnishing and installing keyway and keyway bars, tie bars, taper steel, stopper bars, and other reinforcement bars; delivering; depositing; placing; spreading; screeding; vibration monitoring; finishing; curing; and protecting the concrete.

If the Plans include a separate Contract item for *Concrete Pavement High-Early* or if the Contractor requests high-early and the Engineer approves, the Department will not provide extra compensation for the production of high-early strength concrete. The Contract square yard [square meter] price for *Concrete Pavement High-Early* includes the cost of constructing the pavement, including the cost of batch materials and mixing operations; plant lab-office; producing the concrete; fine grading; forming, including all headers; furnishing and installing keyway bars, tie bars, taper steel, stopper bars, and other reinforcement bars; delivering; depositing; placing; spreading; screeding; vibration monitoring; finishing; curing; and protecting the concrete.

If the Plans do not include a separate Contract item for *Concrete Pavement High-Early* and the Engineer orders high-early concrete, the Department will pay for the additional cement at a rate of the invoice cost plus 15 percent.

B Place Concrete Pavement

Unless the Plans include a separate Contract item for work incidental to *Place Concrete Pavement*, the Contract square yard [square meter] price for *Place Concrete Pavement* includes the cost of constructing the pavement, including fine grading; forming, including all headers; furnishing and installing keyway and keyway bars, tie bars, taper steel, stopper bars, and other reinforcement bars; placing; spreading; screeding; vibration monitoring; finishing; curing; and protecting the concrete.

B.1 Structural Concrete

The Engineer will field calculate the volume of *Structural Concrete* and *Structural Concrete High Early* placed. Due to variations in the asphalt or asphalt bond breaker layer, the Contractor may request additional volume up to 102 percent of the Engineer's field calculated volume of *Structural Concrete, Structural Concrete High Early*, or both. The Engineer will verify additional volume of concrete from the computerized batch ticket printouts from the plant, with consideration of any waste. If the Engineer finds the Contractor's request for the additional volume valid, the Engineer will pay for the additional volume up to 102 percent of the calculated quantity. The Contract cubic yard [cubic meter] price for *Structural Concrete* and *Structural Concrete High-Early* includes the cost of producing, delivering, and depositing the concrete, including the cost of the batch materials and mixing operations and the plant-lab office. If the Plans include a separate Contract item for *Structural Concrete High-Early* or if the Contractor requests high-early and the Engineer approves, the Department will not provide extra compensation for the production of high-early strength concrete.

If the Plans do not include a separate Contract item for *Concrete Pavement High-Early* and the Engineer orders high-early concrete, the Department will pay for additional cement at a rate of the invoice cost plus 15 percent.

C Other Concrete Items

The Contract pound [kilogram] price for *Supplemental Pavement Reinforcement* includes the cost of furnishing and placing the metal reinforcement, including tie wires, supporting devices, and splicing.

The Contract linear foot [meter] price for *Dowelled Expansion Joints, Design ___* includes the cost of constructing the joints complete in place as shown on the plans, including the costs of furnishing and placing dowel bar assemblies, filler, and sealer materials.

The Contract linear foot [meter] price for *Integrant Curb, Design* ___ includes the cost of forming and finishing the curb and protecting and curing the concrete.

The relevant Contract unit price for *Concrete Pavement* or *Place Concrete Pavement* includes the cost of coring, including the cost of material, labor, equipment, delivery, core hole filling, and traffic control.

The Department will pay for concrete pavement on the basis of the following schedule:

Item No.:	Item:	Unit:
2301.604	Concrete Pavement ___ in [___ mm]	square yard [square meter]
2301.604	Concrete Pavement ___ in [___ mm] High-Early	square yard [square meter]
2301.604	Place Concrete Pavement ___ in [___ mm]	square yard [square meter]
2301.511	Structural Concrete	cubic yard [cubic meter]
2301.513	Structural Concrete High-Early	cubic yard [cubic meter]
2301.608	Supplemental Pavement Reinforcement	pound [kilogram]
2301.603	Dowelled Expansion Joints, Design ___	linear foot [meter]
2301.538	Dowel Bar	each
2301.541	Integrant Curb, Design ___	linear foot [meter]

Department of Public Works
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(2360) PLANT MIXED ASPHALT PAVEMENT (2012 VERSION)

March 5, 2012

2360.1 DESCRIPTION

This work consists of constructing plant mixed asphalt pavement on a prepared subgrade.

Plant mixed asphalt pavement designed according to a gyratory mix design method for use as a pavement surface.

A Mixture Designations

The Department will designate the mixture for asphalt mixtures in accordance with the following:

(1) The first two letters indicate the mixture design type:
  (1.1) SP = Gyratory Mixture Design.
(2) The third and fourth letters indicate the course:
  (2.1) WE = Wearing and shoulder wearing course, and
  (2.2) NW = Non-wearing Course.
(3) The fifth letter indicates the maximum aggregate size:
  (3.1) A = ½ in [12.5mm], SP 9.5,
  (3.2) B = ¾ in [19.0mm], SP 12.5,
  (3.3) C = 1 in [25.0mm], SP 19.0, and
  (3.4) D = ⅜ in [9.5mm], SP 4.75.
(4) The sixth digit indicates the Traffic Level (ESAL's × 10^6) in accordance with Table 2360-1, "Traffic Levels."

Table 2360-1
Traffic Levels

Traffic Level	20 Year Design ESALs
2 *	< 1
3 ‖	1 – < 3
4	3 – < 10
5	10 – ≤ 30

NOTE: The requirements for gyratory mixtures in this specification are based on the 20 year design traffic level of the project, expressed in Equivalent Single Axle Loads (ESAL's) 1 × 10^6 ESALs
* AADT < 2,300
‖ AADT > 2,300 to < 6,000

(5) The last two digits indicate the air void requirement:
  (5.1) 40 = 4.0 percent for wear mixtures, and
  (5.2) 30 = 3.0 percent for non-wear and shoulder.
(6) The letter at the end of the mixture designation identifies the asphalt binder grade in accordance with Table 2360-2, "Asphalt Grades."

Table 2360-2 Asphalt Grades	
Letter	**Grade**
A	PG 52 – 34
B	PG 58 – 28
C	PG 58 – 34
E	PG 64 – 28
F	PG 64 – 34
H	PG 70 – 28
L	PG 64 – 22

Ex: Gyratory Mixture Designation -- SPWEB540E (Design Type, Lift, Aggr. Size, Traffic Level, Voids, Binder)

2360.2 MATERIALS

A Aggregate

Use aggregate materials in accordance with 3139.2.

B Asphalt Binder Material.....3151

See Table 2360-7 for Maximum allowable RAP percentages when using PG 58-34, PG 64-34, and PG 70-34. The Contractor can elect to use a blending chart to verify compliance with the specified binder grade for RAP > 20%. The Department may take production samples to ensure the asphalt binder material meets the requirements. The bleinding chart is on the Bituminous Office Website.

C Additives

The Department defines additives as material added to an asphalt mixture or material that does not have a specific pay item. Notify the Engineer in advance of using any WMA additives or processes.

Do not incorporate additives into the mixture unless approved by the Engineer. Add anti-foaming agents to asphalt cement at the dosage rate recommended by the manufacturer. The Contractor may add mineral filler in quantities no greater than 5 percent of the total aggregate weight. The Contractor may add hydrated lime in quantities no greater than 2 percent of the total aggregate weight. Do not add a combination of mineral filler and hydrated lime that exceeds 5 percent of the total aggregate weight. Use methods for adding additives as approved by the Engineer.

C.1 Mineral Filler..... AASHTO M 17

C.1.a Mineral Filler – Hydrated Lime

Provide hydrated lime for asphalt mixtures with no greater than 8 percent unhydrated oxides (as received basis) and meeting the requirements of AASHTO M 216. Use a method to introduce and mix hydrated lime and aggregate as approved by the Engineer before beginning mixture production.

C.2 Liquid Anti-Stripping Additive (Contractor Added)

If adding a liquid anti-strip additive to the asphalt binder, complete blending before mixing the asphalt binder with the aggregate. Only use liquid anti-strip additives that ensure the asphalt binder meets the

Performance Grade (PG) requirements in 3151. The Contractor may use asphalt binder with liquid anti-strip added at the refinery or the Contractor may add liquid anti-strip at the plant site. If using asphalt binder with liquid anti-strip added at the refinery, ensure the supplier tests the binder and additive blend to confirm compliance with the AASHTO M 320. If an anit-strip agent is added at the plant, the plant mixed asphalt producer is considered a supplier and the binder must conform to the requirements of 3151. Do not pave until the asphalt binder and additive blend testing results meet the criteria in 2360.2.B, "Asphalt Binder Material."

C.2.a Mixture Requirements at Design

Design the mixture with the same asphalt binder supplied to the plant site using mixture option 1, "Laboratory Mixture Design" or mixture option 2, "Modified Mixture Design."

Provide documentation with either design option and include the amount of anti-strip needed to meet the minimum tensile strength requirements. Verify that the binder with the anti-strip meets the PG binder requirements for the mixture.

C.2.b Contractor Production Testing Requirements

Sample and test the asphalt binder and anti-strip blend daily. The Contractor may test the blend by viscosity, penetration, or dynamic sheer rheometer (DSR) of the blend. If the contract requires the use of a polymer modified asphalt binder in the mixture, use the DSR as the daily QC test.

Send the Engineer and MnDOT Chemical Laboratory Director a weekly QC report summarizing the results of the daily testing.

Perform at least one test bi-weekly per project to ensure the binder and anti-strip blend meets the requirements of AASHTO M 320. Send the test results to the Engineer and MnDOT Chemical Laboratory Director.

Provide asphalt binder and anti-strip blend field verification samples in accordance with 2360.2.G.7, "Production Test."

C.2.c Liquid Anti-Strip Additive Metering System

Include a liquid anti-strip flow meter and an anti-strip pump with the metering system. Connect the flow meter to the liquid anti-strip supply to measure and display only the anti-strip being fed to the asphalt binder.

Position the meter readout so that the inspector can easily read it.

Provide means to compare the flow meter readout with the calculated output of the anti-strip pump.

Provide a system that displays the accumulated anti-strip quantity being delivered to the mixer unit in gallons [liters] to the nearest gallon [liter] or in units of tons [metric tons] to the nearest 0.001 ton [0.001 tonne].

Calibrate and adjust the system to maintain an accuracy of ± 1 percent.

Calibrate each plant set-up before producing the mixture.

"Stick" the anti-strip tank at the end of the day's production to verify anti-strip usage quantities. The Engineer may require "sticking" on a daily basis.

Ensure the system has a spigot for sampling the binder and anti-strip after blending.

Use alternative blending and metering systems only when pre-approved by the Engineer.

C.3 Coating and Anti Stripping Additive.....3161

D Bituminous Tack Coat 2357

E Mixture Design

E.1 Submittal Location

Submit documentation and sample aggregate materials for review to the District Materials Laboratory.

E.2 Aggregate Quality

Provide aggregate in accordance with 3139.2.

E.3 Restrictions

Do not add aggregates and materials not included in the original mixture submission unless otherwise approved by the Engineer.

E.4 Responsibility

Design a gyratory mixture that meets the requirements of this specification in accordance with the following:

(1) Most current AASHTO T 312, MnDOT modified,
(2) The Asphalt Institute's Superpave Mix Design Manual SP-2 (Use a 2 h short term aging period for volumetric), and
(3) The Laboratory Manual.

E.5 Type of Mixture Design Submittal

E.5.a Option 1 — Laboratory Mixture Design

E.5.a(1) Aggregate

Submit the aggregate samples for option 1, at least 15 working days before beginning production samples for quality testing. At least 30 calendar days before beginning asphalt production, submit samples of aggregates that require the magnesium sulfate soundness test to the District Materials Laboratory. Test the samples for quality of each source, class, type, and size of virgin and non-asphaltic salvage aggregate source used in the mix design. Retain a companion sample of equal size until the Department issues a Mixture Design Report. Provide 24 h notice of intent to sample aggregates to the Engineer. Provide samples in accordance with the following:

Table 2360-4 Aggregate Sample Size		
Classification	**Sieve**	**Weight**
Virgin	Retained on No. 4 [4.75 mm]	80 lb [35 kg]
Virgin	Passing No. 4 [4.75 mm]	35 lb [15 kg]
Recycled asphalt pavement (RAP)	—	80 lb [35 kg]
Recycled asphalt shingles (RAS)	—	10 lb [5 kg] sample of representative RAS material

E.5.a(2) Mixture Sample

At least 7 working days before the start of asphalt production, submit the proposed Job Mix Formula (JMF) in writing and signed by a Level II Quality Management mix designer for each combination of aggregates to be used in the mixture. Include test data to demonstrate conformance to mixture properties as specified in Table 2360-7, "Mixture Requirements," and 3139.2, "Bituminous Aggregates." Use forms approved by the Department for the submission.

Submit an uncompacted mixture sample plus briquettes, in conformance with the JMF, compacted at the optimum asphalt content and required compactive effort for laboratory examination and evaluation. Provide a mixture sample size and the number of compacted briquettes and in accordance with the following:

Table 2360-5 Mixture Sample Requirements	
Item	**Gyratory Design**
Uncompacted mixture sample size	75 lb [30 kg]
Number of compacted briquettes	2

E.5.a(3) Tensile Strength Ratio Sample

At least 7 days before actual production, submit sample to the District Materials Laboratory for verification of moisture sensitivity retained tensile strength ratio (TSR). The Engineer may test material submitted for TSR verification for maximum specific gravity G_{mm} compliance in addition to TSR results. The Engineer will reject the submitted mix design if the tested material fails to meet the G_{mm} tolerance. If the Engineer rejects a mix design, submit a new mix design in accordance with 2360.2.E, "Mixture Design." The Contractor may use one of the following options to verify that the TSR meets the requirements in Table 2360-7, "Mixture Requirements."

E.5.a(4) Option A

Batch material at the design proportions including optimum asphalt. Split the sample before curing and allow samples to cool to room temperature, approximately 77 °F [25 °C]. Submit 80 lb [35 kg] of mixture to the District Materials Laboratory for curing and test verification. Use a cure time of 2 h ±15 minutes at 290 °F [144 °C] cure time for both groups and follow procedures Laboratory Manual Method 1813.

E.5.a(5) Option B

Batch and cure in accordance with Option A. Compact, and submit briquettes and uncompacted mixture in accordance with Table 2360-6, "Option B Mixture Requirements."

Table 2360-6
Option B Mixture Requirements

Item	Gyratory Design
Un-compacted mixture sample size	8,200 g
Number of compacted briquettes*	6
Compacted briquette air void content	6.5 % – 7.5 %

* 6 in [150 mm] specimens.

For both options, cure for 2 h ±15 min at 290° F [144° C] meeting the requirements in the MnDOT Laboratory Manual Method 1813.

E.5.a(6) Aggregate Specific Gravity

Determine the specific gravity of aggregate in accordance Laboratory Manual Methods 1204 and 1205.

E.5.b Option 2 — Modified Mixture Design

The Contractor may use the modified mixture design if testing shows that the aggregates meet the requirements of 3139.2 in the current construction season and if the Level II mix designer submitting the mixture design has at least 2 years' experience in mixture design. The Department will not require mixture submittal.

E.5.b(1) Mixture Aggregate Requirements

Size, grade, and combine the aggregate fractions in proportions that are in accordance with 3139.2.

E.5.b(2) JMF Submittal

At least 2 working days before beginning asphalt production, submit a proposed JMF in writing to the District Materials Laboratory signed by a Level II Quality Management mix designer for each combination of aggregates. For each JMF submitted, include documentation in accordance with 2360.2.E.5.a, "Option1 – Laboratory Mixture Design," to demonstrate conformance to mixture properties as specified in Table 2360-7, "Mixture Requirements," and Table 3139-3, "Mixture Aggregate Requirements." Submit the JMF on forms approved by the Department.

E.5.b(3) Initial Production Test Verification

The Department will take a mix verification sample within the first four samples at the start of production of each mix type. A Field tensile strength ratio (TSR) sample will be taken and tested within the first 5,000 tons [4500 tonnes] of the start of production if required by the Engineer.

E.6 Mixture Requirements

The Department will base mixture evaluation on the trial mix tests and in accordance with Table 2360-7, "Mixture Requirements."

Table 2360-7
Mixture Requirements

Traffic Level	2	3	4	5
20 year design ESALs	< 1 million	1 – 3 million	3 – 10 million	10 – 30 million
Gyratory mixture requirements:				
Gyrations for N_{design}	40	60	90	100
% Air voids at N_{design}, wear	4.0	4.0	4.0	4.0
% Air voids at N_{design}, Non-wear and all shoulder	3.0	3.0	3.0	3.0
Adjusted Asphalt Film Thickness, minimum μ	8.5	8.5	8.5	8.5
Ratio of Added New Asphalt Binder to Total Asphalt Binder,(1), min%	70	70	70	70
TSR*, *minimum %*	75‖	75‖	80†	80†
Fines/effective asphalt	0.6 – 1.2	0.6 – 1.2	0.6 – 1.2	0.6 – 1.2
Ratio of Added New Asphalt Binder to Total Asphalt Binder,(1), min%:				
All Binder Grades	70	70	70	70
Max. Allowable RAP Percentage2 (shingles are included as part of the allowable RAP percentage				
PG 58-34, PG 64-34, PG 70-34	20	20	20	20

* Use 6 in [150 mm] specimens in accordance with 2360.2.I, "Field Tensile Strength Ratio (TSR)."
‖ MnDOT minimum = 65
† MnDOT minimum = 70
1 The ratio of added new asphalt binder to total asphalt binder needs to meet the requirements in Table 2360-7 in both mixtures that contain RAP and in mixtures that include shingles as part of the allowable RAP percentage. ((added binder/total binder) x 100 ≥ 70).
2 The Contractor can elect to use a blending chart to verify compliance with the specified binder grade for RAP > 20%. The Department may take production samples to ensure the asphalt binder material meets the requirements. The bleinding chart is on the Bituminous Office Website

E.7 Coarse/Fine Mixture Determination

Base the determination of coarse and fine graded mixtures on the percentage of material passing the No. 8 [2.36 mm] sieve in accordance with Table 2360-8, "Coarse/Fine Mixture Determination."

Table 2360-8
Coarse/Fine Mixture Determination

Gradation	Fine Mixture, *% passing No. 8 [2.36 mm]*	Coarse Mixture, *% passing No. 8 [2.36 mm]*
A	—	—
B	> 39	≤ 39
C	> 35	≤ 35
D	—	—

E.8 Adjusted Asphalt Film Thickness (Adj. AFT)MnDOT Laboratory Manual Method 1854

Ensure the adjusted asphalt film thickness (Adj. AFT) of the mixture at design and during production meets the requirements of Table 2360-7,"Mixture Requirements." Base the Adj. AFT on the calculated aggregate surface area (SA) and the effective asphalt binder content.

E.9 Documentation

Include the following documentation and test results with each JMF submitted for review:

(1) Names of the individuals responsible for the QC of the mixture during production,
(2) Low project number of the contract on which the mixture will be used,
(3) Traffic level and number of gyrations,
(4) The following temperature ranges as supplied by the asphalt binder supplier:
  (4.1) Laboratory mixing and compaction,
  (4.2) Plant discharge, and
  (4.3) Field compaction.
(5) The percentage in units of 1 percent (except the No. 200 sieve [0.075 mm] in units of 0.1 percent) of aggregate passing each of the specified sieves (including the No. 16, No. 30, No. 50, and No. 100) for each aggregate to be incorporated into the mixture. Derive the gradation of the aggregate from the RAP after extracting the residual asphalt.
(6) Source descriptions of the following:
  (6.1) Location of material,
  (6.2) Description of materials,
  (6.3) Aggregate pit or quarry number, and
  (6.4) Proportion amount of each material in the mixture in percent of total aggregate.
(7) Composite gradation based on (5) and (6) above. Include virgin composite gradation based on (6) and (7) above for mixtures containing RAP/RAS.
(8) Bulk and apparent specific gravities and water absorption (by % weight of dry aggregate). Both coarse and fine aggregate, for each product used in the mixture (including RAP/RAS). Use MnDOT Laboratory Manual Method 1204 and 1205. The tolerance allowed between the Contractor's and the Department's specific gravities are G_{sb} (individual) = 0.040 [+4 and -4] and G_{sb} (combined) = 0.020.
(9) FHWA 0.45 power chart represented by the composite gradation plotted on Federal Form PR-1115
(10) Test results from the composite aggregate blend at the proposed JMF proportions showing compliance with Table 3139-3:
  (10.1) Coarse Aggregate Angularity,
  (10.2) Fine Aggregate Angularity, and
  (10.3) Flat and Elongated
(11) Extracted asphalt binder content for mixtures containing RAP/RAS with no retention factor included.
(12) Asphalt binder percentage in units of 0.1 percent based on the total mass of the mixture and the PG grade.
(13) Each trial mixture design includes the following:
  (13.1) At least 3 different asphalt binder contents (with at least 0.4 percent between each point), with at least one point at, one point above and one point below the optimum asphalt binder percentage.
  (13.2) Maximum specific gravity for each asphalt binder content calculated based on the average of the effective specific gravities measured by using at least two maximum specific gravity tests at the asphalt contents above and below the expected optimum asphalt binder content.

(13.3) Test results on at least two specimens at each asphalt binder content for the individual and average bulk specific gravities, density, and heights.
(13.4) Percent air voids of the mixture at each asphalt binder content.
(13.5) Adj. AFT for each asphalt binder content.
(13.6) Fines to Effective Asphalt (F/A) ratio calculated to the nearest 0.1 percent.
(13.7) TSR at the optimum asphalt binder content.
(13.8) Graphs showing air voids, adjusted AFT, G_{mb}, G_{mm} and unit weight vs. percent asphalt binder content for each of the three asphalt binder contents submitted with trial mix.
(13.9) Evidence that the completed mixture will conform to design air voids (V_a), Adj. AFT, TSR, F/A_e (Fines to effective asphalt ratio).
(13.10) Gyratory densification tables and curves generated from the gyratory compactor for all points used in the mixture submittal.
(13.11) % new asphalt binder to total asphalt binder.

(14) The Contractor has the option of augmenting the submitted JMF with additional sand or rock. When using this option, provide samples of the aggregate for quality analysis in accordance with 2360.2.E.5, "Type of Mixture Design Submittal." Also provide mix design data for two additional design points per add-material. Provide one point to show a proportional adjustment to the submitted JMF that includes 5 percent, by weight, add-material at the JMF optimum asphalt percent. Provide a second point to show a proportional adjustment to the submitted JMF that includes 10 percent, by weight, add material at the JMF optimum asphalt percent. Report the following information for each of these two points:
(14.1) The maximum specific gravity determined by averaging two tests,
(14.2) Test results showing the individual and average bulk specific gravity, density, and height of at least two specimens at the optimum asphalt binder content,
(14.3) Percent air voids for the mixture for each point,
(14.4) Fines to Effective Asphalt ratio calculated to the nearest 0.1 of a percent,
(14.5) Crushing of the coarse and fine aggregate,
(14.6) Adj. AFT, and,
(14.7) Up to two add materials will be allowed.

F Mixture Design Report

The Department will provide a Mixture Design Report consisting of the JMF. Include the following in the JMF:

(1) Composite gradation,
(2) Aggregate component proportions,
(3) Asphalt binder content of the mixture,
(4) Design air voids,
(5) Adj. asphalt film thickness, and
(6) Aggregate bulk specific gravity values.

Show the JMF limits for gradation control sieves in accordance with aggregate gradation broadbands shown in Table 3139-2, percent asphalt binder content, air voids, and Adj. AFT. If the Department issues a Mixture Design Report, this report only confirms that the Department reviewed the mixture and that it meets volumetric properties. The Department makes no expressed or implied guaranty or warranty regarding placement and compaction of the mixture.

Provide materials meeting the requirements of the aggregate and mixture design before issuing a Mixture Design Report. The Department will review two trial mix designs per mix type designated in the plan per contract at no cost to the Contractor. The Department will verify additional mix designs at a cost of $2,000 per design.

Provide a Department - reviewed Mixture Design Report for all paving except for small quantities of material as described in 2360.3.G, "Small Quantity Paving."

For city, county, and other agency projects, provide the District Materials Laboratory a complete project proposal, including addenda, supplemental agreements, change orders, and plans sheets, including typical sections, affecting the mix design before the Department begins the verification process.

G Mixture Quality Management

G.1 Quality Control (QC)

The Contractor will perform Quality Control (QC) as part of the production process. QC is the process control of the operations related to mixture production and determining the quality of the mixture being produced. The QC sample is the Contractor's sample taken and tested during production and used to control the production process. Provide and maintain a QC program for plant mix asphalt production, including mix design, process control inspection, sampling and testing, and adjustments in the process related to the production of an asphalt pavement.

G.1.a Certification

Provide the following to obtain certification:

(1) Completed and submitted request form application for plant inspection.
(2) Site map showing stockpile locations.
(3) Signed asphalt plant inspection report showing the plant and testing facility passed as documented by Asphalt Plant Inspection Report (TP 02142-02, TP 02143-02). The inspection report must also include documentation showing plant and laboratory equipment has been calibrated and is being maintained to the tolerance shown in the Bituminous Manual and sections 1200, 1800, and 2000 of the MnDOT Laboratory Manual.
(4) A Department-signed Mixture Design Report (MDR) before mixture production.

G.1.b Maintaining Certification

Maintain plant certification by documenting the production and testing of the certified plant asphalt mixtures. Sample and test asphalt mixtures in accordance with this section and meeting the requirements of the Schedule of Materials Control.

G.1.b(1) Annual Certification

Perform annual certification after winter suspension.

G.1.b(2) Sampling Rate

Sample at the rate in accordance with 2360.2.G.6 and the requirements of the Schedule of Materials Control.

G.1.b(3) Plant Moved

Recertify the plant if the plant moves to a new or previously occupied location.

G.1.c. Plant Certification Revocation

The Engineer may revoke certification for any of the following reasons:

(1) If the mix does not meet the requirements of 2360.2.E.6 and 3139.2,
(2) If there is a failure to meet the testing rates, or
(3) If it is determined records were falsified.

If the Engineer revokes plant certification, the Department may revoke the Technical Certification of the individual or individuals involved. The Department will maintain a list of companies with revoked certifications.

G.2 Quality Assurance (QA)

The Engineer will perform Quality Assurance (QA) as part of the acceptance process. QA is the process of monitoring and evaluating various aspects of the Contractor's testing as described below. The QA sample is the Department's companion sample to the Contractor's QC sample. QA testing is performed to accept the work. The Engineer will perform the following:

(1) Conduct QA and verification sampling and testing,
(2) Observe the QC sampling and tests,
(3) Monitor the required QC summary sheets and control charts,
(4) Verify calibration of QC laboratory testing equipment,
(5) Communicate Department test results to the Contractor's personnel on a daily basis, and
(6) Ensure Independent Assurance (IA) sampling and testing requirements are met.

If the Engineer observes that the Contractor is not performing sampling and quality control tests in accordance with the applicable test procedures, the Engineer may stop production until the Contractor takes corrective action. The Engineer will notify the Contractor of observed deficiencies promptly, both verbally and in writing.

The Engineer may obtain additional samples, at any time and location during production, to determine quality levels in accordance with 2360.2.G.3, "Verification Sample."

The Department will post a chart with the names and telephone numbers for the personnel responsible for QA.

The Engineer will calibrate and correlate laboratory testing equipment in accordance with the Bituminous Manual and Laboratory Manual.

Table 2360-9 Allowable Differences between Contractor and Department Test Results*	
Item	**Allowable Difference**
Mixture bulk specific gravity (G_{mb})	0.030
Mixture maximum specific gravity (G_{mm})	0.019
Adjusted AFT (calculated)	1.2
Fine Aggregate Angularity, uncompacted voids (U) %	1
Coarse Aggregate Angularity, % fractured faces (%P)	15
Aggregate Individual Bulk Specific Gravity (+ No. 4 [+4.75 mm])	0.040
Aggregate Individual Bulk Specific Gravity (- No. 4 [-4.75mm])	0.040
Aggregate combined blend Specific Gravity (G_{sb})	0.020
Tensile strength ratio (TSR), %	Table 2360-7
Asphalt binder content:	
Meter method, %	0.2
Spot check method, %	0.2
Chemical extraction methods, %	0.4
Incinerator oven, %	0.3
Chemical vs. meter, spot check, or incinerator methods	0.4
Incinerator oven vs. spot check	0.4
Gradation sieve, *% passing:*	
1 in [25.0 mm], ¾ in [19.0 mm], ½ in [12.5 mm], ⅜ in [9.5 mm]	6
No. 4 [4.75 mm]	5
No. 8 [2.36 mm], No. 16 [1.18 mm], No. 30 [0.60 mm]	4
No. 50 [0.30 mm]	3
No. 100 [0.15 mm]	2
No. 200 [0.075 mm]	1.2
* Test tolerances listed are for single test comparisons.	

G.3 Verification Sample

The Department will test a verification sample to assure compliance of the Contractor's QC program. The Department will provide the Contractor a verification companion, which is defined as a companion sample to the verification sample MnDOT uses. Take all verification samples from behind the paver. Test and use this verification companion sample as part of the QC program. Use the verification companion sample to replace the next scheduled QC sample. The Department recommends sampling enough material to accommodate retesting in case the samples fail.

The Department will perform verification testing on at least one set of production tests in accordance with 2360.2.G.6.b, "Production," and 2360.2.G.7, "Production Test," on a daily basis per mix type. Use the verification companion sample to verify the requirements of Table 3139-2, Table 3139-3, and Table 2360-7. Compare the verification companion sample to the verification sample for compliance with allowable tolerances in Table 2360-9, "Allowable Differences between Contractor and Department Test Results."

These include the mixture properties of G_{mm} (mixture maximum gravity), G_{mb} (mixture bulk gravity), asphalt binder content, Adjusted AFT (calculated), Coarse and Fine Aggregate crushing, and gradation. Perform one test per week on a verification companion for coarse and fine aggregate crushing meeting the requirements of 2360.2.G.7.g "Coarse Aggregate Angularity" and 2360.2.G.7.h, "Fine Aggregate Angularity." These do not include the aggregate bulk specific gravity G_{sb}, fines to effective asphalt, or the tensile strength ratio (TSR). Determine the asphalt binder content and gradation in accordance with the extraction method specified in 2360.2.G.7.a, "Asphalt Binder Content," or 23602.G.7.b, "Gyratory Bulk Specific Gravity."

The Contractor may access the Department's verification test results for G_{mm} (mixture maximum gravity), Gmb (mixture bulk gravity), air voids (calculated), asphalt binder content, Adj. AFT (calculated) within 2 working days from the time the sample is delivered to the District Laboratory. The Department will provide the gradation and crushing results to the Contractor within three working days. The Department will include the verification test results on the test summary sheet. The Department will compare the results with the Contractor's verification companion for the allowable tolerances in Table 2360-9, "Allowable Differences between Contractor and Department Test Results." The Department will consider the verification process complete if the Contractor's verification companion meets the tolerances in Table 2360-9.

If the tolerances between the Contractor's verification companion and the Department's verification sample do not meet the requirements of Table 2360-9, the Department will retest the material. If the retests fail to meet tolerances, the Department will substitute the Department's verification test results for the Contractor's results in the QC program and use those results for acceptance. The Department will only substitute the out-of-tolerance parameters and will recalculate volumetric properties if applicable.

If the Adj. AFT calculation does not meet the tolerance, equalize the Department Adj.AFT result by increasing the original Department value by 0.5 microns. Use the increased Department Adj. AFT for the Individual Adjusted AFT result and to calculate the Moving Average Adj. AFT results. The increased Department Adj. AFT will form the basis for acceptance.

If the verification sample retests do not meet tolerances, the Department will immediately investigate the cause of the difference that will include a review of testing equipment, procedures, worksheets, gyratory specimen height sheets, and personnel to determine the source of the problem. The Engineer may require both the Department and Contractor to perform at least one hot-cold comparison of mixture properties.

To perform a hot-cold comparison, split the sample into three representative portions. The Engineer will observe the Contractor testing. Immediately compact one part while still hot. Apply additional heating to raise the temperature of the sample to compaction temperature if necessary. Allow the second and third part to cool to air temperature. Retain the second part and transport the third part to the District Materials Laboratory. On the same day and at the same time as the District Materials Laboratory, heat samples to compaction temperature and compact. Develop a calibration factor to compare the specific gravity of the hot compacted samples to reheated compacted samples. Use at least two gyratory specimens for each test. The Engineer or the Contractor may request that this test be repeated.
Reheat mix samples to 160° F [70° C] to allow splitting of the sample into representative fractions for the various tests. Do not overheat the mixture portions used for testing maximum specific gravity test.

The Department will test the previously collected QA samples until they meet the tolerances or until the Department has tested all of the remaining samples. After testing the samples, the Department will test QA samples subsequent to the verification sample until tolerances are met. The Department will base acceptance on QC data. The Department will base acceptance on QC data with substitution of Department test results for those parameters out of tolerance. Cease mixture production and placement if reestablished test results do not

meet tolerances within 48 h. Resume production and placement only after meeting the tolerances. The process for dispute resolution is available on the Bituminous Office website.

If the Engineer analyzes the data using methods for determination of bias on file in the Bituminous Office and finds a bias in the test results, the Engineer will specify which results to use. If through analysis of data, it is determined that there is a bias in the test results, the Engineer will determine which results are appropriate and will govern.

G.4 Contractor Quality Control

G.4.a Personnel

Submit an organizational chart listing the names and phone numbers of individuals and alternates responsible for the following:

(1) Mix design,
(2) Process control administration, and
(3) Inspection.

Provide QC technicians certified as a Level I Bituminous Quality Management (QM) Tester meeting the requirements of the MnDOT Technical Certification Program for QC testing and Level II Bituminous QM Mix Designer to make process adjustments. Provide at least one person per paving operation certified as a Level II Bituminous Street Inspector.

Provide a laboratory with equipment and supplies for Contractor quality control testing and maintain with the following:

(1) Up-to-date equipment calibrations and a copy of the calibration records with each piece of equipment,
(2) Telephone,
(3) Fax and copy machine; however, the Engineer may waive the requirement to have a fax machine if internet and email are available,
(4) Internet and Email,
(5) Computer,
(6) Printer, and
(7) Microsoft Excel, version 2007 or newer

Laboratory equipment need to meet the requirements listed in Section 400 of the Bituminous Manual, Laboratory Manual, and these specifications, including having extraction capabilities. Before beginning production, the laboratory equipment needs to be calibrated and operational.

Calibrate and correlate all testing equipment in accordance with the Bituminous Manual and Laboratory Manual. Keep records of calibration for each piece of testing equipment in the same facility as the equipment.

G.4.b Sampling and Testing

Take QC/QA samples from behind the paver or when approved by the Engineer from the truck box at the plant site. Sample randomly and in accordance with the Schedule of Materials Control. QC/QA samples are to be quartered from a larger sample of mixture. The procedure for truck box sampling is on the Bituminous Office website. The Engineer may also approve alternate sampling locations. Store compacted QC mixture

specimens and loose QC and Department's QA mixture companion samples for 10 calendar days. Label these split companion samples with companion numbers. Determine random numbers and locations using the Bituminous Manual, Section 5-693.7 Table A or ASTM D 3665, Section 5..

G.5 Production Test Requirements

Determine the planned tonnage [metric tons] for each mixture planned for production during the production day. Divide the planned production by 1,000 and round to the next highest whole number. The result is the number of production tests required for the mixture. Table 2360-11, "Production Testing Rates" shows the required production tests.

Split the planned production into even increments and select sample locations as described above. If actual tonnage is greater than the planned tonnage, repeat the calculation above and provide additional tests if the calculation results in a higher number of production tests. During production, the Department will not require mixture volumetric property tests if mix production is no greater than 300 ton [270 tonne]. Provide production tests if the accumulative weight on successive days is greater than 300 ton [270 tonne].

If there is a choice of more than one MnDOT approved test procedure, select one method at the beginning of the project with the approval of the Engineer and use that method for the entire project. The Contractor and Engineer may agree to change test procedures during the construction of the project.

G.5a Establishing an Ignition Oven Correction Factor ..... MnDOT Lab. Manual 1853 Appendix

On the first day of production, for each mixture type, both the Contractor and the Agency will establish an ignition oven correction factor from the produced mixture. Re-establish correction factors when:

There are aggregate or RAP substitutions

There are 3 or more tolerance failures on the extracted asphalt content between the Agency and the Contractor as defined by Table 2360-9, "Allowable Differences between Contractor and Department Test Results".

G.6 Production Testing Rates

G.6.a Start –Up

At the start of production, for the first 2,000 ton [1,800 tonne] of each mix type, perform testing at the following frequencies:

Table 2360-10 Production Start-Up Testing Rates			
Production Test	Testing Rates	Laboratory Manual Method	**Section**
Bulk Specific Gravity	1 test per 500 ton [450 tonne]	1806	2360.2.G.7.b
Maximum Specific Gravity	1 test per 500 ton [450 tonne]	1807	2360.2.G.7.c
Air Voids (calculated)	1 test per 500 ton [450 tonne]	1808	2360.2.G.7.d
Asphalt Content	1 test per 500 ton [450 tonne]	1853	2360.2.G.7.a
Add AC/Total AC Ratio (calculated)	1 test per 1000 ton [900 tonne]	1853	2360.2.G.7.a
Adj. AFT (Calculated)	1 test per 500 ton [450 tonne]	1854	2360.2.E.6.b
Gradation	1 test per 500 ton [450 tonne]	1203	2360.2.G.7.f
Coarse Aggregate Angularity	1 test per 1,000 tons [900 tonne]	1214	2360.2.G.7.g
Fine Aggregate Angularity (FAA)	1 test per 1,000 ton [900 tonne]	1206	2360.2.G.7.h
Fines to Effective Asphalt Ratio (calculated)	1 test per 500 ton [450 tonne]	1203 & 1853	2360.2.G.7.f & 2360.2.G.7.a

G.6.b Production

After producing the first 2,000 ton [1,800 tonne] of each mix type test at the following frequencies:

Table 2360-11
Production Testing Rates

Production Test	Sampling and Testing Rates	Test Reference	Section
Bulk Specific Gravity	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1806	2360.2.G.7.b
Maximum Specific Gravity	Divide the planned production by 1,000. Round the number to the next higher whole number.	Laboratory Manual 1807	2360.2.G.7.c
Air Voids (calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1808	2360.2.G.7.d
Asphalt Content	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1853	2360.2.G.7.a
Add AC/Total AC Ratio (calculated)	Divide the planned production by 2000. Round the number to the next higher whole number	Laboratory Manual 1853	2360.2.G.7.a
Adj. AFT (Calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1854	2360.2.E.7.e
Gradation	1 gradation per 1,000 tons [900 tonne], or portion thereof (at least one per day)	Laboratory Manual 1203	2360.2.G.7.f
Coarse Aggregate Angularity	2 tests per day for at least 2 days, then 1 per day if CAA is met. If CAA >8% of requirement, 1 sample per day but test 1 per week.	Laboratory Manual 1214	2360.2.G.7.g
Fine Aggregate Angularity (FAA)	2 tests per day for at least 2 days, then 1 per day if FAA is met. If FAA >5% of requirement, 1 sample per day but test 1 per week.	Laboratory Manual 1206	2360.2.G.7.h
Fines to Effective Asphalt Ratio (calculated)	Divide the planned production by 1,000. Round the number to the next higher whole number	Laboratory Manual 1203 & 1853	2360.2.G.7.f & 2360.2.G.7.a
TSR	As directed by the Engineer	Laboratory Manual 1218	2360.G.7.i

Table 2360-11 Production Testing Rates			
Production Test	Sampling and Testing Rates	Test Reference	**Section**
Aggregate Specific Gravity	As directed by the Engineer	Laboratory Manual 1204, 1205, and 1815	2360.G.7.j
Mixture Moisture Content	Daily unless otherwise required by the Engineer	Laboratory Manual 1805	2360.G.7.k
Asphalt Binder	Sample first load (each grade), then 1 per 250,000 gal sample size 1 qt [1,000,000 L]	MnDOT Bituminous Manual 5-693.920	2360.G.7.l

G.7 Production Tests

G.7.a Asphalt Binder Content

Use spot check for determination of asphalt binder content in virgin mixtures only. See the requirements of the Bituminous Manual.

Spotchecks are required only when the Engineer has waived the requirements of 2360.2G8 relating to furnishing a computerized printout of the plant blending control system. A minimum of 1 spotcheck per day per mixture blend is required to determine the new added asphalt binder.

Use an incinerator oven meeting the requirements of the Laboratory Manual Method 1853. Do not use the incinerator oven if the percentage of Class B material is greater than 50 percent within the composite blend, unless the Contractor determines a correction factor approved by the Engineer.

Perform chemical extraction meeting the requirements of Laboratory Manual Method 1851 or 1852.

Use the meter method for determination of asphalt binder content in virgin mixtures only. See the requirements of the Bituminous Manual 5-693.710.

G.7.b Gyratory Bulk Specific Gravity, Gmb

Use two specimens to determine gyratory bulk specific gravity meeting the requirements of Laboratory Manual Method 1806. Set Gyratory to an internal angle of 1.16° ± 0.02° according to AASHTO TP 71.

G.7.c Maximum Specific Gravity, Gmm

Determine maximum specific gravity meeting the requirements of Laboratory Manual Method 1807.

G.7.d Air Voids – Individual and Isolated (Calculation)

Calculate the individual and isolated air voids meeting the requirements of Laboratory Manual Method 1808. Use the maximum mixture specific gravity and corresponding bulk specific gravity from a single

test to calculate the isolated air voids. Use the maximum specific gravity moving average and the bulk specific gravity from a single test to calculate the individual air voids.

Compact gyratory design to N_{design} in accordance with Table 2360-7, "Mixture Requirements" for the specified traffic level.

G.7.e Adjusted Asphalt Film Thickness (AFT) (Calculation)

Calculate the Adj. AFT meeting the requirements of the Laboratory Manual Method 1854.

G.7.f Gradation – Blended Aggregate

Determine the gradation of blended aggregate sample, from an extracted bituminous mixture, meeting the requirements of Laboratory Manual Method 1203.

G.7.g Coarse Aggregate Angularity

Test the Coarse Aggregate Angularity (CAA) meeting the requirements of Laboratory Manual Method 1214 to determine the CAA on composite blend from aggregates used in production of hot mix asphalt. Ensure CAA test results meet the requirements in accordance with Table 3139-3.

The Contractor may test mixtures containing virgin aggregates from composite belt samples. Test mixtures containing RAP from extracted aggregates taken from standard production samples. Test the percentage of fractured faces of the composite aggregate blend less than 100 percent twice a day for each mixture blend for at least two days, then one test per day if the test samples meet the CAA requirements. If the CAA crushing test results are greater than 8 percent of the requirements, take one sample per day and perform one test per week.

Report CAA results on the test summary sheet. The Department may reduce payment in accordance with Table 2360-15, "Reduced Payment Schedule for Individual Test Results," for mixture placed and represented by results below the minimum requirement in accordance with Table 3139-3. The Department will calculate tonnage subjected to reduced payment as the tons placed from the sample point of the failing test to the sampling point where the test result meets the specifications.

G.7.h Fine Aggregate Angularity

Use Laboratory Manual Method 1806 to test the composite blend from aggregates used in production of asphalt mixtures for Fine Aggregate Angularity (FAA) meeting the requirements of Table 3139-3. The Contractor may test mixtures that contain virgin aggregates from composite belt samples. Test mixtures that contain RAP from extracted aggregates taken from standard production samples. Perform two tests per day for each mixture blend for at least two days to test the percentage of uncompacted voids from the composite aggregate blend, then one test per day if the samples meet FAA requirements. If FAA test results are greater than 5 percent of the requirement, take one sample per day and one test per week.

Report FAA results on the test summary sheet. The Department may reduce payment in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results," for mixture placed and represented by results below the minimums in accordance with Table 3139-3. The Department will calculate tonnage subjected to reduced payment as the tons placed from the sample point of the failing test to the sampling point where the test result meets the specifications.

G.7.i Field Tensile Strength Ratio (TSR)..... Laboratory Manual Method 1813

If the Engineer requires sampling and testing of the mixture to verify tensile strength ratio (TSR), both the Contractor and the Department will be required to test these samples within 72 h after sampling. The Contractor shall obtain a sample weighing at least 110 lb [50 kg] and split the sample in half to provide a sample for the Department and the Contractor. Label the Department companion of this split with the following information:

(1) Date,
(2) Time,
(3) Project number, and
(4) Cumulative tonnage to date.

After the sample is split and labeled, give the Department's companion sample to the Department Street Inspector or Plant Monitor or to the Materials Engineer within 24 h of sampling as directed by the Engineer. When using Option 2, obtain the sample within the first 5,000 ton [4,500 tonne] of plant mixed asphalt produced or by the second day of production, whichever comes first, to verify tensile strength ratio (TSR).Take mixture samples from behind the paver unless the Engineer approves an alternate sampling location. Provide a 6 in [150 mm] specimen for gyratory design. The Contractor may test the sample at a permanent lab site or a field lab site..

When using Option 2, obtain the sample within the first 5,000 ton [4,500 tonne] of plant mixed asphalt produced or by the second day of production, whichever comes first, to verify tensile strength ratio (TSR).

Refer to Table 2360-12, "Mixture Type, Minimum TSR," for the minimum acceptable TSR values for production. Stop production immediately if the material does not meet minimum TSR requirements. Do not resume production until after adding anti-strip to the asphalt binder. Determine the responsible party for the cost of the anti-strip in accordance with the Department and Contractor TSR values in Table 2360-13. If the Department is responsible for the cost of the anti-strip, the Department will only pay for the cost of the anti-strip for mixtures placed on that project. The Department will not pay for delay costs associated with making changes related to this testing.

Table 2360-12
Mixture Type, Minimum TSR

Traffic Level 2 – 3, %		Traffic Level 4 – 5, %	
Contractor	**MnDOT**	**Contractor**	**MnDOT**
75	65	80	70

Table 2360-13
Anti-Strip Cost Responsibility

Gyratory Level	Contractor TSR	MnDOT TSR	Responsibility
2 – 3	≥ 75	≥ 65	No anti-strip required
		< 65	Contractor
	< 75	≥ 65	Department
		< 65	Contractor
4 – 5	≥ 80	≥ 70	No anti-strip required
		< 70	Contractor
	< 80	≥ 70	Department
		< 70	Contractor

Take another sample and test within the first 500 ton [450 tonne] after production resumes. Stop production if the re-test fails to meet the minimum specified value. Discuss a proposal to resolve the problem with the Engineer before resuming production. Do not operate below the specified minimum TSR if at least 2 successive tests fail the TSR requirements.

A new sample and retest is automatically required if a proportion changes by greater than 10 percent from the currently produced mixture for a single stockpile aggregate or the Engineer directs the Contractor to sample and retest.

G.7.j Aggregate Specific Gravity(Gsb) ..... Laboratory Manual Methods 1204, 1205, 1815

Sample and test aggregate stockpiles to verify aggregate specific gravity if directed by the Engineer in conjunction with the District Materials Engineer. Provide 90 lb [40 kg] representative stockpile samples for each aggregate component. Split samples in half to provide material for both the Department and the Contractor. Label the Department companion with the following information:

(1) Date,
(2) Time,
(3) Project number, and
(4) Approximate cumulative tonnage to date.

Give the Department companion to the Department Street Inspector or Plant Monitor immediately after splitting or to the Materials Engineer within 24 h of sampling as directed by the Engineer. The Materials Engineer will compare the aggregate specific gravity results to the Contractor's values on the current Mix Design Report. If the results deviate beyond the tolerance in accordance with Table 2360-16, "Allowable Differences between Contractor and Department Test Results," the Materials Engineer will notify the Contractor and issue a new Mix Design Report with the current specific gravity results. Base new mixture placed after receiving notification of new specific gravity values on the Department results. The Engineer will notify the Contractor regarding new specific gravity values. The dispute resolution procedure for aggregate specific gravity is on the Bituminous Office website.

G.7.k Moisture Content..... Laboratory Manual Method 1855

Provide a mixture with moisture content no greater than 0.3 percent. Measure moisture content in the mixture behind the paver or, if approved by the Engineer, in the truck box. Sample and test on a daily basis

unless otherwise directed by the Engineer. Store the sample in an airtight container. Do not perform microwave testing.

Do not provide plant mixed asphalt with a moisture content greater than 0.3 percent.

G.7.l Asphalt Binder Samples

Sample the first shipment of each type of asphalt binder, then sample at a rate of one per 250,000 gal [1,000,000 L]. Provide a 1 qt [1.0 L] sized sample. Take samples meeting the requirements of the Bituminous Manual, 5-693.920. The Inspector will monitor the sampling the Contractor performs. Record sample information on an Asphalt Sample Identification Card. Submit the sample to the Central Materials Laboratory. Contact the Department Chemical Laboratory Director for disposition of failing asphalt binder samples.

G.8 Documentation

Maintain documentation, including test summary sheets and control charts, on an ongoing basis. Maintain a file of gyratory specimen heights for gyratory compacted samples and test worksheets. File reports, records, and diaries developed during the work as directed by the Engineer. These documents become the property of the Department.

Number test results in accordance with the MDR and record on forms approved and provided by the Department.

Send production test results on test summary sheets to the District Materials Laboratory and to other sites as directed by the Engineer by 11 AM of the day following production by facsimile, or e-mail when approved by the Engineer.

Include the following production test results and mixture information on the Department approved test summary sheet:

(1) Percent passing on all sieves in accordance with Table 3139-2 (including No. 16, No. 30, No. 50, No. 100),
(2) Coarse and fine aggregate crushing,
(3) Maximum specific gravity (G_{mm}.),
(4) Bulk specific gravity (G_{mb}),
(5) Percent total asphalt binder content (P_b),
(6) New added asphalt binder content,
(7) Ratio of % new added asphalt binder to total asphalt binder,
(8) Calculated production air voids (V_a),
(9) Calculated adjusted AFT (Adj. AFT),
(10) Composite aggregate specific gravity (G_{sb}) reflecting current proportions,
(11) Aggregate proportions in use at the time of sampling,
(12) Tons where sampled,
(13) Tons represented by a test and cumulative tons produced,
(14) Fines to effective asphalt ratio (F/A_e),
(15) Signature Line for MnDOT and Contractor Representative,
(16) Mixture Moisture Content, and
(17) MnDOT verification sample test result.
(18) Identify, when used, the WMA additive or process.

Submit copies of failing test results to the Engineer on a daily basis.

Provide the Engineer with asphalt manifests or bill of lading's (BOL) on a daily basis.

Provide a daily plant diary, including a description of QC actions taken. Include changes or adjustments on the test summary sheets.

Provide weekly truck scale spot checks.

Provide a Department approved accounting system for mixes and provide a daily and final project summary of material quantities and types.

Provide a final hard and electronic copy of QC test summary sheets and control charts, and density worksheets at completion of bituminous operations on the project to the Engineer.

Provide an automated weigh scale and computer generated weigh ticket. Ensure the ticket indicates the following information:

(1) Project number,
(2) Mix designation, including binder grade,
(3) Mixture Design Report number,
(4) Truck identification and tare,
(5) Net mass, and
(6) Date and time of loading.

Do not include deviations from the minimum information on the computer generated weigh ticket unless otherwise approved by the Engineer in writing.

Continue test summary sheets, charts, and records for a mixture produced at one plant site from contract to contract. Begin new summary sheets and charts annually for winter carry-over projects. Begin new summary sheets and charts when an asphalt plant is re-setup in the same location after it has moved out.

Furnish an electronic printout (long form recordation) from an automated plant blending control system at 20 minute intervals when the plant is producing mixture. The Engineer may waive this requirement if the plant does not have the capability to produce the automated blending control information; however, the Contractor must then perform daily spotchecks to determine percent new asphalt added.

Include the following information on the plant control printout for Drum Plants::

(1) Both the virgin and recycle belt feed rates (tons/hr),
(2) Feeder bin proportions (%),
(3) Total % asphalt cement in the mixture,
(4) Virgin asphalt cement added (%)
(5) Mixture Temperature °F [°C],
(6) Mixture code,
(7) Date and time stamp, and
(8) Current tons of mixture produced and daily cumulative tons of mixture produced at time of printout.

Provide a daily electronic printout of the plant calibration (SPAN) numbers for each bin and meter.

Include the following information on the plant control printout for Batch Plants:

(1) Both the virgin and recycle belt feed rates (tons/hr),
(2) Feeder bin proportions (%),
(3) Mixture Temperature °F [°C],
(4) Mixture code,
(5) Date and time stamp, and
(6) Current tons of mixture produced and daily cumulative tons of mixture produced at time of printout.

Provide a daily electronic printout of the plant calibration (SPAN) numbers for each bin and meter.

G.9 Control Charts

Provide control charts and summary sheets computer generated from software approved by the Engineer. The Contractor may use software available at the Bituminous Office. Record the following data on standardized control charts:

(1) Blended aggregate gradation, include sieves in accordance with Table 3139-2 for specified mixture;
(2) Percent asphalt binder content (P_b);
(3) Maximum specific gravity (G_{mm});
(4) Production air voids (V_a); and
(5) Adj. AFT.

Unless otherwise directed by the Engineer, plot individual test results for each test point and connect individual points with a solid line. Plot the moving average for each test variable starting with the fourth test and connect with a dashed line. Plot the Department's QA and verification test results with triangles. Plot the specification JMF limits on the control charts using a dotted line.

G.10 JMF Limits

Base the production air voids and Adj. AFT on the minimum specified requirements in accordance with Table 2360-7, "Mixture Requirements." Base gradations and asphalt binder content limits on the current Department reviewed Mixture Design Report. Provide gradation control sieves in accordance with Table 3139-2. Refer to the Mixture Design Report for the mixture production targets. JMF limits are the target plus or minus the limits in accordance with Table 2360-14, "JMF Limits (N=4)." Use JMF limits as the criteria for acceptance of materials based on the moving average.

Table 2360-14
JMF Limits (N=4)

Item	JMF Limits
Adj. AFT	- 0.5
Production air voids, %	± 1.0
Asphalt binder content, %	- 0.4
Sieve, *% passing:*	
1 in [25.0 mm], ¾ in [19.0 mm], ½ in [12.5 mm], ⅜ in [9.5 mm], No. 4 [4.75 mm]	Broad band limits
No. 8 [2.36 mm]	Broad band limits
No. 200 [0.075 mm]	Broad band limits

G.11 Moving Average Calculation

Calculate a moving average as the average of the last four test results. Continue the calculation without interruption, except begin new summary sheets and charts annually for winter carry-over projects and if an asphalt plant is re-setup in the same site after it has been moved out.

G.12 JMF Bands

JMF Bands are the area between the target, as identified on the Mixture Design Report, and the JMF limits.

G.13 JMF Adjustment

Begin mixture production with aggregate proportions within 5 percent of the design proportions and mixture parameters in Table 2360-14 within the JMF limits shown. Use all the aggregate proportions included on the Mixture Design Report unless the aggregate proportion is shown as 0 percent. If the Contractor provides the District Materials Laboratory with prior documented production data showing how production affects the mixture properties or if the Contractor provides the District Materials Laboratory with a written justification or explanation of material changes since the original mixture submittal waive the preceding requirements.

G.13.a JMF Request for Adjustment

The Contractor may make a request to the Bituminous Engineer or District Materials Engineer for a JMF adjustment to the mix design if the QC test results indicate a necessary change to achieve the specified properties. Do not use aggregates or materials not part of the original mix design to make adjustments unless otherwise approved by the Engineer, in conjunction with the District Materials Engineer or the Department Bituminous Engineer.

A Certified Level II Bituminous QM Mix Designer will review the requested change for the Department. If the request meets the design requirements in Table 3139-2,"Aggregate Gradation Broad Bands", Table 3139-3,"Mixture Aggregate Requirements", and Table 2360-7, "Mixture Requirements," the Department will issue a revised Mixture Design Report. Each trial mixture design submittal in accordance with 2360.2.E, "Mixture Design" may have three JMF adjustments per mixture per project without charge. The Department will charge the Contractor $500 for each additional JMF adjustment requests.

Perform an interactive process with the Engineer before making JMF adjustments. Make JMF adjustments only within the mixture specification gradation design broadbands in accordance with Table 3139-2. Submit a new JMF if redesigning the mixture. Only reduce the JMF asphalt content if the moving average Adj. AFT is 8.5μ or more and Individual Adjusted AFT is at least 7.5 μ.

The department will not allow consecutive requests for a JMF adjustment without production data. Continue calculation of the moving average after the approval of the JMF.

G.13.b JMF Request for Adjustment for Proportion Change > 10%

If requesting a JMF adjustment for a proportion change greater than 10 percent from the currently produced mixture for a single stockpile aggregate, provide supporting production test data from at least four tests run at an accelerated testing rate of one test per 500 ton [450 tonne] with the adjustment request. The Department will base acceptable verification and approval of the requested JMF on individual and moving average test results in addition to the requirements listed above. Individual test results must be within twice the requested JMF limits for percent asphalt binder, production air voids, and Adj. AFT. Individual gradations must be within the Broad Bands. The moving average values must be within the control limits in accordance with Table 2360-14. Continue to calculate the moving average after the change in proportions.

If the mixture meets the design requirements as discussed in G.13.a, the District Materials Laboratory will sign the request for JMF adjustment effective from the point of the proportion change. If the mixture fails to meet the design requirements, the Department will either reduce the payment or direct the Contractor to remove and replace. Do not make consecutive requests for JMF adjustments without production data.

G.13.c JMF Request for Adjustment When Cumulative Proportion Changes > 10%

Submit a request for JMF adjustment when the cumulative change on any one product exceeds 10% from the original MDR. The Department will issue a revised MDR provided the mixture meets the requirements in Table

3139-2,"Aggregate Gradation Broad Bands", Table 3139-3,"Mixture Aggregate Requirements", and Table 2360-7, "Mixture Requirements".

G.14 Failing Materials

The Department will base material acceptance on individual and moving average test results. The Department will use isolated test results for acceptance of air voids at the start of mixture production. The Department will consider individual test results greater than two times the JMF bands as failing. The Department will fail moving average test results exceeding the JMF limits. Begin new summary sheets annually for winter carry-over projects.

Stop production and make adjustments if the moving average values exceed the JMF limits. Restart production after performing the adjustments and notifying the Engineer. Resume testing at the accelerated rates and for the tests listed in Table 2360-10, "Production Start-Up Testing Rates," for the next 2,000 ton [1,800 tonne] of mixture produced. Continue calculating the moving average after the stop in production.

The Department will consider mixture produced where the moving average of four exceeds the JMF limits as unsatisfactory in accordance with 2360.2.G.14.d, "Moving Average Failure at Mixture Start-Up – Production Air Voids," 2360.2.G.14.e, "Moving Average Failure at Mixture Start-Up — Adjusted AFT," 2360.2.G.14.f, "Moving Average Failure - Production Air Voids," and 2360.2.G.14.g, "Moving Average Failure — Percent Asphalt Binder Content, Gradation, and Adj. AFT."

If the total production of a mixture type for the entire project requires no greater than four tests the Department will accept the material in accordance with 2360.2.G.14.b, "Isolated Failures at Mixture Start-Up —

Production Air Voids," and 2360.2.G.14.c, "Individual Failure — Gradation, Percent Asphalt Binder, Production Air Voids, and Adj. AFT."

If the Contractor's testing data fails to meet the tolerances in accordance with Table 2360-9, "Allowable Differences between Contractor and Department Test Results," the Department will substitute QA and verification data to determine the payment factor.

G.14.a Ratio of New Added Asphalt Binder to Total Asphalt Binder – Acceptance Criteria

The minimum design ratio of new added asphalt binder to total asphalt binder is 70% when a PG XX-28, PG 52-34, PG 64-22, or PG 49-34 is the specified asphalt grade. During production the ratio must meet individual and moving average requirements as listed in Table 2360-15,"Ratio of New Added Asphalt Binder to Total Asphalt Binder Acceptance Criteria". If the individual or moving average ratio drops below the minimum requirement, the Contractor must stop production and make adjustments to correct the process. Restart production only after notifying the Engineer of the adjustments made and the Contractor will conduct 2 spot checks within the next 1,000 tons [907 tonnes] of mixture produced to verify the ratio. The calculation of the moving average will continue after the stop in production.

Table 2360-15
Ratio of New Added Asphalt Binder to Total Asphalt Binder Acceptance Criteria

Specified PG Grade	Individual Ratio	Moving Average Ratio
PG XX-28, PG 52-34, PG 64-22, PG 49-34	66% Minimum	70% Minimum

G.14.b Isolated Failures at Mixture Start-Up – Production Air Voids

At the start-up of mixture production, use the first three isolated test results for production air voids before establishing a moving average of four. Calculate isolated production air voids using the maximum mixture specific gravity and the corresponding bulk specific gravity from that single test. After testing four samples and establishing a moving average of four, the Department will base acceptance on individual and moving average production air voids.

The Department will not accept the material if any of the first three isolated test results for production air voids exceeds twice the JMF bands from the target listed on the Mixture Design Report at the start of production. The Department will reduce payment for unacceptable material in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the quantity of unacceptable material on the tonnage placed from the sample point of the failing test to the sample point when the isolated test result is back within twice the JMF bands. If the failure occurs at the first test after the start of production, the Department will calculate the tonnage subject to reduced payment as described above, including the tonnage from the start of production.

If isolated air voids are no greater than 1.0 percent or greater than 7.0 percent, the Engineer will either reduce the payment or order the material removed and replaced at no additional cost to the Department. The Engineer may require the Contractor to test in-place mixture to better define the removal and replacement limits. The Engineer may require the Contractor to test in-place mixture placed before the failing test result. If the Engineer reduces the payment, the Department will pay for the material at 50 percent of the contract unit price.

G.14.c Individual Failure – Gradation, Percent Asphalt Binder, Production Air Voids, and Adj. AFT

Table 2360-16
Reduced Payment Schedule for Individual Test Results

Item	Pay Factor, % *
Gradation	95
Coarse and fine aggregate crushing	90
Asphalt binder content	90
Production air voids, individual ‖ and isolated†	80

* Apply the lowest pay factor when using multiple reductions on a single test.
‖ Calculate individual air voids using the moving average maximum specific gravity and the bulk specific gravity from that single test.
† Calculate the isolated air voids from the maximum specific gravity and the bulk specific gravity from that single test. The Engineer will only use isolated void test results for acceptance for the first three tests after mixture production start-up.

The Department will not accept material with individual gradation tests greater than the JMF Broad Bands listed on the Mixture Design Report. The Department will reduce payment for unacceptable material in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will reduce payment to all tonnage represented by the individual test.

If the individual test result for adjusted AFT is less than 7.5μ, the Department may either reduce payment in accordance with Table 2360-17, "Reduced Payment Schedule for Individual Test Results, Adjusted AFT," or order the material removed and replaced represented by the individual test. This tonnage includes all material placed from the sample point of the failing test to the sample point when the test result meets specification requirements. If the failure occurs at the first test after the start of daily production, the Department

will include the tonnage from the start of production that day with the tonnage subject to reduced payment or removal and replacement.

Table 2360-17 Reduced Payment Schedule for Individual Test Results, Adjusted AFT	
Individual Adjusted AFT, μ	**Pay Factor, %**
≥ 7.5	100
7.4 – 7.0	90
6.9 – 6.1	75
≤ 6.0	R&R(*)
* Remove and replace at no expense to the Department.	

The Department will not accept material if the individual tests for percent asphalt binder content or production air voids exceeds twice the JMF bands from the target listed on the Mix Design Report. The Department will reduce payment in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the material subject to reduced payment as the material placed from the sample point of the failing test until the sample point when the test result is back within twice the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include tonnage from the start of production that day with the tonnage subjected to reduced payment.

The Department will not accept material if individual air voids are no greater than 1.0 percent or greater than 7.0 percent, Remove and replace unacceptable material at no additional cost to the Department as directed by the Engineer. Test in-place mixture to better define the area to be removed and replaced as directed by the Engineer. Test mixture placed before the failing test result as directed by the Engineer. The Department may reduce payment for unacceptable material at 50 percent of the relevant contract unit price.

G.14.d Moving Average Failure at Mixture Start-Up — Production Air Voids

If a moving average failure occurs within any of the first three moving average results after mixture start-up (tests 4, 5, 6), the Department will accept the mixture if the individual air void, corresponding to the moving average failure meets the JMF limits. The Department will not accept material if the individual air void fails to meet the JMF limit. The Department will reduce payment for unacceptable material unless the Engineer determines that the isolated air void corresponding to the individual air void meets the JMF limit. The Department will pay for unacceptable material at 70 percent of the relevant contract unit price. The Department will calculate the quantity of material subject to reduce payment as the tons placed from the sample point of the failing moving average result and corresponding individual air void beyond the JMF limit to the sampling point when the individual test result is back within the JMF limit. If the failure occurs at the first test after the start of daily production, the Department will include tonnage from the start of production that day with the tonnage subjected to reduced payment.

G.14.e Moving Average Failure at Mixture Start-Up — Adj. AFT

The Engineer will calculate the Moving Average (n=4) Adj. AFT during the sixth test after the beginning of mixture production of that specific mixture. The Engineer will include the individual results of calculations for tests No. 3, No. 4, No. 5, and No. 6 with this calculation.

G.14.f Moving Average Failure — Production Air Voids

A moving average production air void failure occurs when the individual production air void moving average of four exceeds the JMF limit. The Department will consider the mixture unacceptable and

subject to reduced payment. The Department will pay for unacceptable mixture at 70 percent of the contract unit price. The Department will calculate the quantity of mixture subject to reduced payment as the tons placed from the sample point of all individual test results beyond the JMF limits, which contributed to the moving average value that exceeded the JMF limit, to the sampling point where the individual test result meets the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subject to reduced payment.

Table 2360-18
Reduced Payment Schedule for Moving Average Test Results

Item	Pay Factor, % *
Gradation	90
Coarse and fine aggregate crushing	NA (individual failures only)
Adjusted AFT	80
Asphalt binder content	80
Production air voids	70
* Lowest Pay Factor applies when there are multiple reductions on a single test.	

G.14.g Moving Average Failure - Percent Asphalt Binder Content, Gradation, and Adj. AFT

The Engineer will consider the mixture unacceptable and subject to reduced payment for mixture properties, including asphalt binder content and gradation, where the moving average of four exceeds the JMF limits. The Department may reduce payment for unacceptable mixture properties in accordance with Table 2360-18, "Reduced Payment Schedule for Moving Average Test Results." The Department will calculate the quantity of material subject to replacement or reduced payment as the tons placed from the sample point of all individual test results beyond the JMF limits, which contributed to the moving average value that exceeded the JMF limit, to the sampling point when the individual test result is back within the JMF limits. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subjected to reduced payment.

The Engineer will calculate the Moving Average (n=4) Adjusted AFT during the sixth test after the beginning of mixture production of that specific mixture. The Engineer will include the individual results of calculations for tests No. 3, No. 4, No. 5, and No. 6 with this calculation. The Department will consider material with the Moving Average (n=4) of the Adjusted AFT is less than 8.0 μ as unsatisfactory and will pay for the material at 80 percent of the relevant contract unit price. The Department will calculate the quantity of material subject to replacement or reduced payment as the tons placed from the sample point of all Individual Adjusted AFT results less than 8.0μ, which contributed to the Moving Average value that was less than 8.0μ, to the sample point where the Individual Adjusted AFT is at least 8.0μ. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subject to reduced payment.

G.14.h Coarse and Fine Aggregate Crushing Failure

If any CAA or FAA test results does not meet the requirements specified in Table 3139-3, the Department may reduce payment for the placed material in accordance with Table 2360-16, "Reduced Payment Schedule for Individual Test Results." The Department will calculate the quantity of material subject to reduced payment as the tons placed from the sample point of the failing test until the sampling point where the test result meets the specifications. If the failure occurs at the first test after the start of daily production, the Department will include the tonnage from the start of production that day with the tonnage subjected to reduced payment.

2360.3 CONSTRUCTION REQUIREMENTS

A Restrictions

A.1 Asphalt Release Agents

Do not use petroleum distillates to prevent adhesion of asphalt mixtures to equipment. An asphalt release agent must meet the criteria for "Effect on Asphalt" as described in the most recent Asphalt Release Agent on file in MnDOT's Office of Environmental Services.

A.2 Edge Drop Off

When construction is under traffic, the requirements of 2221.3.D will apply.

A.3 Surge and Storage Bins

Store the asphalt mixture for no more than 18 h at storage facilities that prevent segregation of the mix and drainage of asphalt from the mix. Maintain the mixture at within 9 °F [5 °C] of the temperature when discharged from the silo or mixer and prevent excessive cooling or overheating.

A.4 Weather Limitations and Paving Date

Do not perform work within the roadway in the spring until removal of seasonal load restrictions on roads in the vicinity unless otherwise approved by the Engineer. Do not place asphalt mixtures when weather or roadbed conditions are judged unfavorable by the Engineer.

Do not place asphalt pavement final wearing course lift after October 15 north of an east-west line between Browns Valley and Holyoke, or after November 1 south of an east-west line between Browns Valley and Holyoke. The Engineer may waive these restrictions when:

(1) The Contractor is not placing asphalt mixture on the traveled portion of the roadway,
(2) The roadway involved is closed to traffic during the following winter, or
(3) The Engineer provides written direction to place the mixture.

B Equipment

B.1 Plant

B.1.a Segregation

Provide plant mixed asphalt from a plant capable of producing a uniform mix free of segregation.

B.1.b Scales

Test and calibrate scales in accordance with 1901.

B.1.c Mineral Filler

Add mineral filler to the mixture using a storage silo equipped with a device to ensure a constant and uniform feed.

B.1.d Storage Tanks

Provide storage tanks equipped to heat and maintain the material at the temperatures recommended by the certified asphalt supplier. Place the discharge end of the circulating line below the surface of the asphalt material. Provide agitation for modified asphalt as recommended by the supplier.

Provide an outage table or chart and measuring stick for each storage or working tank. Equip tanks with provisions to take asphalt binder material samples. After delivery of asphalt binder material to the project, do not heat the material at temperatures greater than 350° F [175° C]. Do not store modified asphalt at temperatures greater than the manufacturer's recommendation.

B.1.e Asphalt Binder Control

If proportioning asphalt binder material by volume, equip the plant with either a working tank or a metering system to determine asphalt binder content of the mixture.

Provide a working tank with a capacity from 1,000 gal to 2,000 gal [3,800 L to 7,600 L]. Calibrate and supply the working tank with a calibrated measuring stick. The Contractor may connect the tank to a mixing unit and use it only during spot check operations as long as it is available at all times. Return feedback to the working tank during spot check operations.

Provide a metering system with at least one approved asphalt binder flow meter and a asphalt binder pump. Connect the flow meter to the asphalt binder supply to measure and display only the asphalt binder being fed to the mixer unit. Position the meter readout for convenient observation. Provide a means to compare the flow meter readout with the calculated output of the asphalt binder pump. Provide a system to display that shows the accumulated asphalt binder quantity being delivered to the mixer in gallons [liters] or to the nearest 0.001 ton [0.001 tonne]. Calibrate and adjust the system to maintain an accuracy of ±1 percent error for each plant set-up before producing the mixture.

Provide an outage table or chart and measuring stick for each storage or working tank. Equip tanks with provisions to take asphalt binder material samples. After delivery of asphalt binder material to the project, do not heat the material at temperatures greater than 350° F [175° C]. Do not store modified asphalt at temperatures greater than the manufacturer's recommendation.

B.1.f Dryer

The Department will not allow unburned fuel in the mix.

B.1.g Temperature Control

Equip the plant with enough temperature sensors to ensure temperature control of the aggregate and asphalt binder.

B.1.h Pollution 1717

B.2 Street Equipment

B.2.a Paver

Provide a paver capable of spreading and finishing to widths as shown on the plans and with an operational vibratory screed and automatic screed control to place mix without segregation.

Use an asphalt paver to place the mixture. When necessary, the Contractor may use a motor grader, when approved by the Engineer, to spread mixtures in areas that are inaccessible to a paver or when the quantity of mixture makes it impractical to place with a paver.

Use a shouldering machine to spread the mixture on shoulder surfacing and uniform width widening, when the placement width is too narrow for a paver.

Using a screed or strike-off assembly, produce a finished surface of the required evenness and texture without tearing, shoving, or gouging. For mainline paving, if the paving width is greater than the basic screed, auger and mainframe extensions, which meet manufacturer's recommendations for the paving width, are required unless otherwise directed by the Engineer. The Department will not allow strike-off only extension assemblies for mainline wearing course paving, unless the Engineer directs otherwise.

Equip all pavers with an approved automatic screed control. Sensor-operated devices need to include automatic controls that follow reference lines, or surfaces on one or both sides of the paver as required. Adjust the speed of the paver to produce the best results. A string line is only required if stated in the contract.

Spread all mixtures without segregation to the cross sections shown on the plans (excluding tight blade and scratch course applications). The objective on the leveling layer is to secure a smooth base of uniform grade and cross section so that subsequent courses will be uniform in thickness. The Contractor may spread the leveling layer with a properly equipped paver or, when approved by the Engineer, a motor grader equipped with a leveling device or with other means for controlling the surface elevation of the leveling layer.

Place each course over the full width of the section under construction on each day's run, unless the Engineer directs otherwise.

B.2.b Trucks

Provide trucks with tight, clean, and smooth truck haul beds. Do not allow mixture to adhere to the truck beds. When directed by the Engineer, provide a cover that extends at least 1 ft [300 mm] over the truck bed sides and attach to tie-downs, if the truck is not equipped with a mechanical or automated covering system.

B.2.c Motor Graders

Use a motor grader with the following characteristics:

(1) Self-propelled,
(2) Equipped with pneumatic tires with a tread depth of ½ in [13 mm] or less,
(3) Equipped with a moldboard blade that is at least 10 feet [3 m], and
(4) With a wheelbase of at least 15 feet [4.5 m].

B.2.d Distributor

Provide a distributor capable of uniformly applying material up to 15 ft [4.6 m] wide and equipped with the following:

(1) An accurate volume measuring device with tachometer,
(2) Pressure gauges,
(3) Thermometer for measuring temperatures of tank contents,
(4) Power-operated pump, and
(5) Full circulation spray bars with lateral and vertical adjustments.

B.2.e Rollers

Compact each lift of asphalt to the density require in 2360.3.D, "Compaction."

B.2.e(1) Steel-Wheeled Rollers

Self-propelled steel wheeled compacting equipment must weigh at least 8 ton [7.3 tonne]. If using vibratory rollers, provide rollers that produce 3,085 lbf per ft [45 kN per m] of width and a vibratory frequency of at least 2,400 vpm using the low amplitude setting. Provide a roller capable of reversing without backlash and equipped with spray attachments for moistening rollers on both sets of wheels.

B.2.e(2) Pneumatic Tired Rollers

Self-propelled pneumatic tired compacting equipment must have a compactiion width of at least 5 ft [1.5 m] and a gross wheel load force of at least 3,000 lb [13 kN] per wheel for traffic level 2 and level 3 mixtures, 5,000 lb [22 kN] per wheel for traffic level 4 and level 5 mixtures, and, if using vibratory, at least 8 ton [7.3 tonne] total mass. Provide a roller with a tire arrangement that obtains full compaction over the full width with each pass of the roller.

B.2.e(3) Trench Rollers

Self-propelled trench rollers must weigh at least 2,960 lb per foot [4,400 kg per meter] of width.

B.3 Tack Coat

Apply an asphalt tack coat to the existing asphalt or concrete surfaces, and to the surface of each course or lift constructed, except for the final course or lift, in accordance with 2357. Allow emulsified asphalt tack coats to break, as indicated by a color change from brown to black, before placing subsequent lifts.

Apply the tack coat to contact surfaces of all fixed structures and the edge of the in-place mixture in all course at transverse joints and longitudinal joints.

C Joints

C.1 Construction Joints

Compact joints to produce a neat, tightly bonded joint that meets surface tolerances as described in 2360.3.E. Transverse and longitudinal joints are subject to the density requirement in accordance with 2360.3.D, "Compaction."

C.2 Transverse Joints

Construct a transverse joint, the full width of the paver, at right angles to the centerline when mixture placement operations are suspended. When work resumes, cut the end vertically for the full depth of the layer unless constructing a formed edge as approved by the Engineer.

C.3 Longitudinal Joint

Construct the longitudinal joint between strips and parallel to the pavement centerline. In multiple lift construction, construct the longitudinal joints between strips in each lift at least 6 in [150 mm]

measured transversely from the longitudinal joints in the previously placed lift. If constructing a wearing course in an even number of strips, place one longitudinal joint on the centerline of the road. When constructing a wearing course in an odd number of strips, locate the centerline of one strip on the centerline of the road, provided that no joint is located in the wheel path area of a traffic lane. The Contractor will align longitudinal joints in multiple lift construction over portland cement concrete pavements directly over the concrete pavement longitudinal joints as approved by the Engineer.

At longitudinal joints formed by placing multiple strips, ensure the adjoining surface is higher but does not exceed ⅛ in [3 mm], after final compaction of the previously placed strip. When constructing a strip adjoining a previously placed strip or a concrete pavement, remove to the longitudinal joint line, any fresh mixture that overlaps a previously placed strip or pavement before rolling.

D Compaction

After spreading each course, compact in accordance with the maximum density method as described in 2360.3.D.1, unless the ordinary compaction method is called for in the special provisions or as described in 2360.3.D.2, "Ordinary Compaction." Do not allow rollers to stand on the uncompacted mixture or newly rolled pavement with a surface temperature greater than 140 °F [60 °C]. Do not roll with steel-wheeled rollers if rolling produces aggregate that is crushed, cracked, or pulverized or causes displacement of the mixture.

To maintain a true surface, correct the following by removing and replacing the material in the defective areas as directed by the Engineer at no additional cost to the Department:

(1) Variations such as depressions or high areas, which may develop during rolling operations; and
(2) Lean, fat, or segregated areas.

When spreading mixtures with a motor grader, compact the mixture with pneumatic tired rollers simultaneously with the spreading operation.

D.1 Maximum Density

Compact the pavement to at least the minimum required maximum density values in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)," and Table 2360-20, "Longitudinal Joint Density Requirement." Density evaluation will include compacted mat density and compacted longitudinal joint density. Density evaluation will not include longitudinal joint density on lifts with a 1 percent reduced density requirement.

Table 2360-19
Required Minimum Lot Density (Mat)

			SP Shoulders* ‖	
	SP Wear Mixtures* ‖	**SP Non-Wear Mixtures* ‖**	**Designed at 3% Voids**	**Designed at 4% voids**
% Gmm	92	93	93	92

* Reduce the minimum by 1 percent on the first lift constructed over PCC pavements.
‖ Reduce the minimum by 1 percent for the first lift constructed on aggregate base (mainline and shoulder), reclaimed or cold in place recycled base courses and first lift of an overlay on roadway with a spring load restriction no greater than 7 ton [6.35 tonne], including shoulders.

Table 2360-20 Longitudinal Joint Density Requirement		
Location	**Confined Edge of Mat***	**Unconfined Edge of Mat‖**
Long joint wear and shoulder (4% air voids)	89.5	88.1
Long joint non-wear and shoulder (3% air voids)	90.5	89.1

* The Department defines "confined" as the edges of the placed mat abutting another mat, pavement surface, or curb and gutter.

‖ The Department defines "unconfined" or "unsupported" as no abutment on the side of the mat being placed with another mat or pavement surface.

D.1.a Shoulders Greater Than 6 ft [1.8 m]

Unless otherwise shown on the plans or required by the special provisions, compact shoulders wider than 6 ft [1.8 m] paved using the maximum density method. When shoulders are compacted by the maximum density method and are paved separately from the driving lane, or have a different required minimum density than the driving lane, delineate the lot tonnage placed on the shoulder in separate lots from the driving lanes for the day paving was conducted.

D.1.b Shoulders Equal to or Less Than 6 ft [1.8 m]

Unless otherwise shown on the plans or required by the special provisions, use the ordinary compaction method in accordance with 2360.3.D.2 to compact a narrow shoulder no wider than 6 ft [1.8 m] paved in the same pass as a driving lane or paved separately. The Department will exclude mixture compacted under ordinary compaction from lot density requirements and from incentive or disincentive payment.

When compacting a narrow shoulder using the maximum density method, compact to densities in accordance with Table 2360-19. If the minimum required density of the shoulder is different than the driving lane, delineate the tonnage placed on the shoulder in separate lots from the driving lane.

D.1.c Echelon Paving

The Department considers echelon paving, two pavers running next to each other in adjacent lanes, as separate operations.

D.1.d Determination

Calculate each individual lot's maximum density by averaging the results of the cores within the lot expressed as the percentage of the maximum specific gravity. Test fine graded mix in accordance with Laboratory Manual Method 1810. Test coarse graded mix in accordance with Laboratory Manual Method 1816 when directed by the Engineer. Determination of coarse or fine graded mixtures is based on the percentage of material passing the No. 8 [2.36 mm] sieve as defined in Table 2360-8.

Obtain the maximum specific gravity value for calculating the percentage density for the lot from the maximum gravity values taken from production tests during that day's paving. If the production tests during that day's paving result in only one or two maximum specific gravity values, use the moving average value at that test point. If production tests during that day's paving result in three or more maximum specific gravity values, use the average of those tests alone as indicated above.

D.1.e Timeline

Complete compaction within 8 h of mixture placement and before obtaining core samples. Only use pneumatic tired or static steel rollers for compaction performed between 6 h and 8 h after mixture placement. Do not reroll compacted mixtures with deficient densities.

D.1.f Stop Production

If all the lots in a day's production or greater than 50 percent of the lots on multiple days fail to meet the minimum density requirement, stop production, determine the source of the problem, and take corrective action to bring the work into compliance with specified minimum required density.

D.1.g Lot Determination

Table 2360-21
Lot Determination

Daily Production, *ton [tonne]*	**Lots**
300* – 600 [270* – 545]	1
601 – 1,000 [546 – 910]	2
1,001 – 1,600 [911 – 1,455]	3
1,601 – 2,600 [1,456 – 2,360]	4
2,601 – 4,600 [2,361 – 4,175]	5
> 4,600 [4,175]	‖

* If producing no greater than 300 ton [270 tonne] of mix, establish the first lot when the total weight is greater than 300 ton [270 tonne].
‖ Add one lot for each additional 900 tons [820 tonne] or part thereof.

D.1.h Mat Density Cores

Obtain four cores in each lot. Take two cores from random locations as directed by the Engineer. Take the third and fourth cores, the companion cores, within 1 ft [0.3 m] longitudinally from the first two cores. Submit the companion cores to the Engineer immediately after coring and sawing. If the random core location falls on a longitudinal joint, cut the core with the outer edge of the core barrel 1 ft [0.3 m] away laterally from the edge of the top of the mat. Do not take cores for compacted mat density within 1 ft [300 mm] of any longitudinal joint. The Contractor is responsible for maintaining traffic, coring, patching the core holes, and sawing the cores to the paved lift thickness before density testing.

The Engineer may require additional density lots to isolate areas affected by equipment malfunction, heavy rain, or other factors affecting normal compaction operations.

D.1.i Contractor Core Testing

Take and test cores at least 4 in [100 mm] in diameter at locations determined and marked by the Engineer.

Mark samples with the lot number and core number or letter. Transport the cores to the laboratory daily taking care to prevent damage to them. Schedule the approximate time of testing during normal project work

hours to allow the Engineer to observe the test and to record the saturated surface dry and immersed weight of the cores.

Determine the density by the end of the next working day after compaction. Measure each core three times for thickness before saw cutting. Report the average lift thickness on the core sheet. If placing multiple layers in a single day, saw and separate cores for each layer, test, and report by the end of the next working day. Place and compact mix into the coring hole to restore the surface within 24 h after coring or the Department will fine the Contractor $100 per working day per lot until restored.

D.1.j Companion Core Testing

The Department will select at least one of the two companion cores per lot to test for verification. For lots designated as longitudinal joint density lots, the Department will test at least one of the mat density companion cores and at least one of the longitudinal joint density companion cores.

D.1.k Tolerance Comparison

D.1.k(1) Tolerance Comparison – Individual

Compare the individual core bulk specific gravities obtained by the Contractor and by the Department. If the bulk specific gravity between the Contractor and the Department cores differ by more than 0.030, use the Department's bulk specific gravity.

D.1.k(2) Tolerance Comparison – Day's Shrinking Tolerance

For a second comparison of the cores that pass the individual tolerance criteria, compare the average of the Contractor's bulk specific gravities with the average of the Department's bulk specific gravities.

Determine the tolerance by dividing 0.030 by the square root of the number of samples compared. Use all the Department's results for the day's paving if the cores do not fall within the determined tolerance.

D.1.l Recoring

The Engineer may allow the Contractor to re-core a sample if the sample was damaged in the coring process or damaged in transit to the laboratory through no fault of the Contractor.

D.1.m One Percent Reduced Density

The Department will exclude incentive payments for reduced minimum density in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)." The Contractor may request the Engineer to waive the reduced density requirement and reevaluate the density in accordance with Table 2360-19, "Required Minimum Lot Density (Mat)," including incentives, for all cases except the first lift constructed over concrete pavement. Make the request and obtain approval from the Engineer after the first day's paving and by the end of the third day of paving. If the Engineer approves the request, the normal maximum density will remain in effect for the duration of mixture placement on that lift. The Contractor shall comply with any construction requirements on subsequent lifts.

D.1.n Longitudinal Joint Density

Evaluate longitudinal joint density in one lot per day unless the total daily weight is greater than 5,000 ton [5,000 tonne]. If the total daily weight is greater than 5,000 ton [5,000 tonne], evaluate two lots per day. Randomly select the location to take cores for longitudinal joint density from the mat density core locations.

Take six cores at this location. Take cores for longitudinal joint density with the outer edge of the core barrel within 6 in [150 mm] from the edge of the top of the mat for both sides of the mat. Take a companion core 1 ft [0.3 m] longitudinally from each core. Take two cores for mat density at either 2 ft [0.61 m] right or 2 ft [0.61 m] left of the center of the mat the Contractor is paving, regardless of random number generation.

D.1.o Imaginary Joint

An actual longitudinal joint will not exist if pulling the shoulder and driving lane in the same paving pass. Do not cut a core on the imaginary line where a joint would have existed had the shoulder and the drive lane been paved separately.

D.1.p Shoulders

D.1.p(1) Shoulder – Ordinary Compaction

If compacting the shoulder under the ordinary density specification, do not take longitudinal joint cores in shoulders. Core at the centerline longitudinal edge cores (6 in [150 mm] from the joint) and at the mat density cores (2 ft [0.61 m] right or left of the center of the paving pass).

D.1.p(2) Shoulder-Maximum Density Specification

Core at the following locations:

(1) Centerline longitudinal edge cores (6 in [150 mm] from the joint),
(2) Mat density cores (2 ft [0.61 m] right or left of the center of the paving pass), and
(3) Edge of the shoulder (6 in [150 mm] from the outside edge).

Do not cut cores on the imaginary line at the edge of the shoulder adjacent to the driving lane. Move coring locations on imaginary lines to 6 in [150 mm] inside the edge of the shoulder.

D.1.q Payment Schedule

Table 2360-22
Payment Schedule for Maximum Mat Density

SP Wear and SP Shoulders (4% Void) Density, %*	SP Non-Wear and SP Shoulders (3% Void), Density, %*	Mat Density Pay Factor A	
		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 93.6	≥ 94.6	1.03 ‖	1.05 ‖
93.1 – 93.5	94.1 – 94.5	1.02 ‖	1.04 ‖
92.0 – 93.0	93.0 – 94.0	1.00	1.00
91.0 – 91.9	92.0 – 92.9	0.98	0.98
90.5 – 90.9	91.5 – 91.9	0.95	0.95

Table 2360-22
Payment Schedule for Maximum Mat Density

SP Wear and SP Shoulders (4% Void) Density, %*	SP Non-Wear and SP Shoulders (3% Void), Density, %*	Mat Density Pay Factor A	
		Traffic Level 2 & 3	Traffic Level 4 & 5
90.0 – 90.4	91.0 – 91.4	0.91	0.91
89.5 – 89.9	90.5 – 90.9	0.85	0.85
89.0 – 89.4	90.0 – 90.4	0.70	0.70
< 89.0	< 90.0	†	†

* Calculate the percent of maximum specific gravity to the nearest tenth.

‖ Payment will only apply if the day's weighted average individual production air voids fall within - ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Tests" for the corresponding day and weight by the tons the corresponding test represents.

† The Department will pay for the mixture represented by the lot at 70 percent of the relevant contract unit price, unless a single core density is less than 87.0 percent of the maximum specific gravity (Gmm). If a single core density is less than 87.0 percent of Gmm, the Engineer will decide if the mixture is subject to removal and replacement or reduced payment at 50 percent of the relevant contract unit price. If the Engineer decides the material needs to be removed and replace, the Contractor will remove and replace the material at no additional cost to the Department. Use additional core samples to determine the limits of the removal and replacement area. Take additional core samples at the same offset from centerline as the original core. If the original low density core was taken within 1½ ft [0.45 m] of an edge of the paver pass, take additional cores at 1½ ft [0.45 m from the edge of the paver pass. Determine the densities at 50 ft [15 m] intervals both ahead and behind the point of unacceptable core density until finding a point of acceptable core density. If the incremental core density testing extends into a previously accepted lot, remove the unacceptable material. Do not use to the test results to recalculate the previously accepted lot density. Perform additional coring and testing for unacceptable core density at no additional cost to the Department. The Department will calculate the area of unacceptable pavement as the product of the longitudinal limits as determined by the 50 ft [15 m] cores and the full width of the paver pass, laying in the traffic lane or lanes. The Department will exempt shoulders from this calculation unless density failure occurred in the shoulder area. After removing and replacing the unacceptable material, determine the density of the replacement material by averaging the two cores. The Department will pay for the replacement material in accordance with Table 2360-22 or Table 2360-23. The Department will not pay for material removed. The Department will pay for the remainder of the original lot at 70 percent of the relevant contract unit price.

Table 2360-23* 1 Percent Reduced Table		
SP Wear and SP Shld (4% Void) Maximum Specific Gravity, %‖	**SP Non-Wear, and SP Shld (3% Void), Maximum Specific Gravity, %‖**	**Payment, %**
≥ 91.0	≥ 92.0	100
90.0 – 90.9	91.0 – 91.9	98
89.7 – 89.9	90.5 – 90.9	95
89.4 – 89.6	90.0 – 90.4	91
89.2 – 89.3	89.5 – 89.9	85
89.0 – 89.1	89.0 – 89.4	70
< 89.0†	< 89.0	†

* Reduce the minimum by 1 percent for the first lift constructed on aggregate base (mainline and shoulder), reclaimed or cold inplace recycled base courses and first lift of an overlay on a roadway with a spring load restriction (including shoulders) no greater than 7 ton [6.35 tonne]. Reduce the minimum by 1 percent on the first lift constructed on PCC pavements (reduced density cannot be waived on PCC).

‖ Calculate the percent of maximum specific gravity to the nearest tenth.

† The Department will pay for the mixture represented by the lot at 70 percent of the relevant contract unit price, unless a single core density is less than 87.0 percent of the maximum specific gravity (Gmm). If a single core density is less than 87.0 percent of Gmm, the Engineer will decide if the mixture is subject to removal and replacement or reduced payment at 50 percent of the relevant contract unit price. If the Engineer decides the material needs to be removed and replace, the Contractor will remove and replace the material at no additional cost to the Department. Use additional core samples to determine the limits of the removal and replacement area. Take additional core samples at the same offset from centerline as the original core. If the original low density core was taken within 1½ ft [0.45 m] of an edge of the paver pass, take additional cores at 1½ ft [0.45 m from the edge of the paver pass. Determine the densities at 50 ft [15 m] intervals both ahead and behind the point of unacceptable core density until finding a point of acceptable core density. If the incremental core density testing extends into a previously accepted lot, remove the unacceptable material. Do not use to the test results to recalculate the previously accepted lot density. Perform additional coring and testing for unacceptable core density at no additional cost to the Department. The Department will calculate the area of unacceptable pavement as the product of the longitudinal limits as determined by the 50 ft [15 m] cores and the full width of the paver pass, laying in the traffic lane or lanes. The Department will exempt shoulders from this calculation unless density failure occurred in the shoulder area.

After removing and replacing the unacceptable material, determine the density of the replacement material by averaging the two cores. The Department will pay for the replacement material in accordance with Table 2360-22 or Table 2360-23. The Department will not pay for material removed. The Department will pay for the remainder of the original lot at 70 percent of the relevant contract unit price.

Table 2360-24*

Payment Schedule for Longitudinal Joint Density
(SP Non-wear and SP Shoulders, 4% Void)

Longitudinal Joint (Confined Edge) Density, %‖	Pay Factor B Longitudinal (Confined Edge)		Longitudinal Joint (Unsupported Edge) Density, %‖	Pay Factor C (Unsupported Edge)	
	Traffic Level 2 & 3	Traffic Level 4 & 5		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 92.1	1.02†	1.03†	≥ 91.0	1.02†	1.03†
91.6 – 92.0	1.01†	1.02†	90.1 – 90.9	1.01†	1.02†
89.5 – 91.5	1.00	1.00	88.1 – 90.0	1.00	1.00
88.5 – 89.4	0.98	0.98	87.0 – 88.0	0.98	0.98
87.7 – 88.4	0.95	0.95	86.0 – 86.9	0.95	0.95
87.0 – 87.6	0.91	0.91	85.0 – 85.9	0.91	0.91
< 87.0	0.85	0.85	< 85.0	0.85	0.85

* The Department will limit incentive payment for longitudinal joint density to lots with evaluated longitudinal joint densities.

‖ Calculate the percent of maximum specific gravity to the nearest tenth.

† Payment will only apply if the day's weighted average individual production air voids fall within - ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Tests" for the corresponding day and weight by the tons the corresponding test represents.

Table 2360-25*

Payment Schedule for Longitudinal Joint Density
(SP Non-wear and SP Shoulders, 3% Void)

Longitudinal Joint (Confined Edge) Density, % ‖	Pay Factor B Longitudinal (Confined Edge)		Longitudinal Joint (Unsupported Edge) Density, % ‖	Pay Factor C (Unsupported Edge)	
	Traffic Level 2 & 3	Traffic Level 4 & 5		Traffic Level 2 & 3	Traffic Level 4 & 5
≥ 93.1	1.02†	1.03†	≥ 92.0	1.02†	1.03†
92.6 – 93.0	1.01†	1.02†	91.1 – 91.9	1.01†	1.02†
90.5 – 92.5	1.00	1.00	89.1 – 91.0	1.00	1.00
89.5 – 90.4	0.98	0.98	88.0 – 89.0	0.98	0.98
88.7 – 89.4	0.95	0.95	87.0 – 87.9	0.95	0.95

Table 2360-25*
Payment Schedule for Longitudinal Joint Density
(SP Non-wear and SP Shoulders, 3% Void)

Longitudinal Joint (Confined Edge) Density, % ‖	Pay Factor B Longitudinal (Confined Edge)		Longitudinal Joint (Unsupported Edge) Density, % ‖	Pay Factor C (Unsupported Edge)	
	Traffic Level 2 & 3	Traffic Level 4 & 5		Traffic Level 2 & 3	Traffic Level 4 & 5
88.0 – 88.6	0.91	0.91	86.0 – 86.9	0.91	0.91
< 88.5	0.85	0.85	< 86.0	0.70	0.85

* The Department will limit incentive payment for longitudinal joint density to lots with evaluated longitudinal joint densities.

‖ Calculate the percent of maximum specific gravity to the nearest tenth.

† Payment will only apply if the day's weighted average individual production air voids fall within ½ percent of the target air void value. Base the weighted average air voids on all the mixture production tests in accordance with 2360.2.G.7, "Production Test" for the corresponding day and weight by the tons the corresponding test represents.

D.1.r Pay Factor Determination

Determine the pay factor in accordance with the following:

(1) Case 1: Total Pay Factor = (Pay Factor A) × (Pay Factor B) × (Pay Factor C)
(2) Case 2: Total Pay Factor = (Pay Factor A) × (Pay Factor B) × (Pay Factor B)
(3) Case 3: Total Pay Factor = (Pay Factor A) × (Pay Factor C) × (Pay Factor C)

Where:

Pay Factor A = Mat density,
Pay Factor B = Confined edge density,
Pay Factor C = Unsupported edge density.

Use a pay factor of 1.00 for Pay Factor B, Pay Factor C, or both in lots where no cores are taken at the longitudinal joint.

D.2 Ordinary Compaction

Perform ordinary compaction for the following:

(1) Layers identified in the typical sections with a minimum planned thickness less than 1½ in [40 mm],
(2) Thin lift leveling,
(3) Wedging layers,
(4) Patching layers,
(5) Driveways, and
(6) Areas the Contractor cannot compact with standard highway construction equipment.

If using the ordinary compaction method to evaluate density, use a control strip to establish a rolling pattern. Use the rolling pattern to compact the asphalt mixture for the layer on which the control strip is

constructed or until constructing a new control strip. The Engineer may waive the control strip requirement in small localized areas or other areas not conducive to its establishment.

D.2.a Control Strip

Construct a control strip at least 395 sq. yd [330 sq. m] and of the same thickness as the lift the control strip represents at the beginning of the work on each lift of each course. Begin compacting immediately after spreading the mixture. Continue compacting until additional roller coverage does not produce appreciable increase in density. Determine densities by means of a portable nuclear testing device or approved alternate and create a growth curve to determine the optimum rolling pattern. Provide documentation of the growth curve to the Engineer. Roll the remainder of that course in accordance with the pattern developed in the test strip for that roller. Provide a new control strip in accordance with the following:

(1) If using a new JMF with a proportion change greater than 10 percent when compared to the currently produced mixture for a single stockpile aggregate,
(2) If changing the source of either aggregate or binder, or
(3) After 10 days of production.

D.2.b Equipment

Use rollers that meet the requirements in 2360.3.B.2.e. Use the same equipment type and weight on the remainder of the pavement course that was used to construct the control strip. Provide at least two rollers. Provide a tandem steel wheeled roller for final rolling. The Contractor may use trench rollers or mechanical tampers to compact areas inaccessible to the conventional type rolling equipment.

D.2.c Mixture Temperature

Refer to Table 2360-26, "Minimum Temperature Control" for the minimum laydown temperatures in all courses of the asphalt mixture as measured behind the paver or spreading machine. Do not pave when the air temperature is less than 32° F [0° C] unless otherwise directed by the Engineer in writing.

Table 2360-26* Minimum Temperature Control				
Air Temperature, *°F [°C]*	Compacted Mat Thickness, †			
	1 in [25 mm]	**1½ in [40 mm]**	**2 in [50 mm]**	**≥3 in [75 mm]**
32 – 40 [0-5]	—	265[129] ‖	255 [124]	250 [121]
41 – 50 [6-10]	270 [130] ‖	260 [127]	250 [121]	245 [118]
51 – 60 [11-15]	260 [127] ‖	255 [124]	245 [118]	240 [115]
61 – 70 [16-21]	250 [121] ‖	245 [118]	240 [115]	235 [113]
71 – 80 [22-27]	245 [118]	240 [115]	235 [113]	235 [113]
81 – 90 [28-32]	235 [113]	230 [110]	230 [110]	230 [110]
≥ 91 [33]	230 [110]	230 [110]	230 [110]	225 [107]

* Not applicable if using a Warm Mix Asphalt (WMA) additive or process

‖ Use at least one pneumatic-tire roller for intermediate rolling unless otherwise directed by the Engineer. The Engineer may specify or modify the minimum laydown temperature in writing.

† Based on the lift thicknesses shown on the plans.

E Surface Requirements

After compaction, the finished surface of each lift shall be reasonably free of segregated, open and torn sections, and shall be smooth and true to the grade and cross section shown on the plans with the following tolerances:

Table 2360-26 Surface Requirements		
Course/Location	**Description**	**Tolerance**
Leveling/1st lift using automatics	Tolerance also applies to 1st lift placed other than leveling when automatics are used.	½ in [15 mm]
Wear	Tolerance of final 2 lifts from the edge of a 10 foot [3 m] straightedge laid parallel to or at right angles to the centerline.	¼ in [6 mm]
Shoulder Wear, Temporary Wear & bypasses	Tolerance from the edge of a 10 foot [3 m] straightedge laid parallel to or at right angles to the centerline.	¼ in [6 mm]
Transverse joints/construction joints	Tolerance from the edge of a 10 foot [3 m] straightedge centered longitudinally across the transverse joint. Correction by diamond grinding required when directed by the Engineer.	¼ in [6 mm]
Transverse Slope	Tolerance for surface of each lift exclusive of final shoulder wear.	Not to vary by more than 0.4 % from plans.

Distance from edge of each lift and established centerline.	No less than the plan distance or more than 3 inches [75 mm] greater than the plan distance. The edge alignment of the wearing lift on tangent sections and on curve sections of 3 degrees or less can't deviate from the established alignment by more than 1 inch [25 mm] in any 25 foot [7.5 m] section.	See Description
Final wear adjacent to concrete pavements.	After compaction the final lift wear adjacent to concrete pavements must be slightly higher but not to exceed 1/4" [6mm] than the concrete surface.	See Description
Final wear adjacent to fixed structures.	After compaction the final lift wear adjacent to gutters, manholes, pavement headers, or other fixed structures must be slightly higher but not to exceed 1/4" [6mm] than the surface of the structure.	See Description
Finished surface of each lift.*	Must be free of segregated and open and torn sections and deleterious material. *Excluding tight blade and scratch courses	See Description

Cut or saw and then remove and replace material placed outside the described limitations at no additional cost to the Department. If the Engineer determines the material can remain in place outside the limits, the Department will pay for the material at a reduced cost of $10 per sq. yd [$12 per sq. m]. The Department will consider any single occurrence of material outside the limitations to have a minimum dimension of at least 1 sq. yd [1 sq. m] in any dimension.

In addition to the list the above the pavement surface must meet requirements of 2399 (Pavement Surface Smoothness) requirements.

E.1 Lift Thickness

After compaction, the thickness of each lift shall be within a tolerance of ¼ in [6 mm] of the thickness shown on the plans, except that, if automatic grade controls are used, this thickness requirement will not apply to the first lift placed. This thickness requirement will not apply to a leveling lift whether or not automatic grade controls are required. The Engineer may require removal and replacement of any part of any lift that is constructed to less than the minimum required thickness, at no additional cost to the Department.

Measure cores taken for density determination for thickness also. Measure each core three times for thickness before sawing. Report the average of these three measurements. Document each lot's average core thickness and submit to the Engineer. If the average of the two Contractor cores exceed the specified tolerance, an additional two cores may be taken in the lot in question. The Engineer will use the average of all core thickness measurements per day per lift to determine daily compliance with thickness specifications.

On that portion of any lift constructed to more than the maximum permissible thickness, the materials used in the excess mixture above that required to construct that portion of the lift to the plan thickness plus ¼ in [6 mm] may be excluded from the pay quantities or at the discretion of the Engineer and at the Contractor's expense may be required to be removed and replaced.

F Asphalt Mixture Production (FOB Department Trucks)

Produce asphalt mixture for the Department. Load the mixture being produced onto Department furnished trucks at the mixing plant at a time agreed on by the Engineer and Contractor. The Engineer will notify

the Contractor of the total quantity of mixture required not less than 2 weeks prior to completion of the final wearing course. The Engineer will not accept the asphalt mixture if it is unsuitable for the intended use.

G Small Quantity Paving

A MDR is not required for planned project quantities less than 9,000 sq. yd inches (4,500 sq. yd per 2-inch thickness, etc) [191,200 m^2 mm] or 500 ton [450 tonne]. Verify in writing that the asphalt mixture delivered to the project meets the requirements of Table 3139-3 and Table 2360-7, "Mixture Requirements." The Department will obtain samples, as determined by the Engineer, to verify mixture requirements and to perform material acceptance in accordance with 2360.2.G.14.b, "Isolated Failures at Mixture Start-Up — Production Air Voids," 2360.2 G.14.c, "Individual Failure — Gradation, Percent Asphalt Binder, Production Air Voids, and Adj. AFT," and 2360.2.G.14.h, "Coarse and Fine Aggregate Crushing Failure."

2360.4 METHOD OF MEASUREMENT

When paying for material by weight, the Engineer will measure separately asphalt mixture of each type by weight based on the total quantity of material hauled from the mixing plant. The Engineer will not make deductions for the asphalt materials.

When paying for material by area, the Engineer will separately measure asphalt mixture of each type and for each specific lift by area and by thickness on the basis of actual final dimensions placed.

2360.5 BASIS OF PAYMENT

The contract unit price for asphalt mixture used in each course includes the cost of constructing the asphalt surfacing and providing and incorporating asphalt binder, mineral filler, hydrated lime. Anti-stripping additives may be permitted or required as indicated in 2360.2.C.

The Department will pay for additives required by the contract at the relevant contract unit price for the mixture. The Department will pay for additives incorporated as directed by the Engineer as extra work in accordance with 1403, "Extra Work."

The Department will apply reduced payment if the mixture includes steel slag as one of the aggregate proportions and the production lab density at the design gyrations at the recommended or established asphalt content is greater than 160 lb per cu. ft [2,565 kg per cu. m]. The Department will pay for the mixture at the contract unit price, calculated as follows:

$$\%Payment = \frac{100 - (100 \times (production\_density\_at\_design\_gyrations - 160)}{160}$$

$$\left[\%Payment = \frac{100 - (100 \times (production\_density\_at\_design\_gyrations - 2{,}565)}{2{,}565}\right]$$

If the plans do not show a contract pay item for shoulder surfacing and other special construction, the Department will include payment for the quantities of material used for these purposes in the payment for the wearing course materials.

Complete yield checks and monitor thickness determinations to construct the work as shown on the plans. Use the tolerances for lift thickness in accordance with 2360.3.E, "Surface Requirements" and surface smoothness requirements in accordance with 2399 for occasional variations and not for continuous over-running or under-running, unless otherwise required by the Engineer.

The contract unit price for asphalt mixture production includes the cost of the material and loading onto Department-provided trucks at the mixing plant.

The Department will pay for plant mixed asphalt pavement on the basis of the following schedule:

Item No.:	Item:	Unit:
2360.501	Type SP* Wearing Course Mixture †‡	ton [metric ton]
2360.502	Type SP* Non-Wearing Course Mixture †‡	ton [metric ton]
2360.503	Type SP* ‖ Course Mixture †‡# in [mm] thick,	square yard [square meter]
2360.504	Type SP* ‖ Course Mixture †‡	square yard [square meter]
2360.505	Type SP * Bituminous Mixture for Specified Purpose	ton [metric ton]
2360.506	Type SP * Bituminous Mixture Production	ton [metric ton]

* Aggregate size Designation, 9.5, 12.5 or 19 as appropriate, see 2360.1.A.3.
‖ "Wearing" or "Non Wearing" as appropriate.
† Traffic level in accordance with Table 2360-1, "Traffic Levels."
‡ AC binder grade designation (Table 2360-2).
# Lift thickness shown on the plans.

EEO SPECIAL PROVISIONS

38 sheets

EQUAL EMPLOYMENT OPPORTUNITY (EEO) SPECIAL PROVISIONS

This section of Special Provisions contains the Equal Employment Opportunity (EEO) rules and regulations for highway construction projects in Minnesota which are federally and/or State funded.

The source of funding determines which EEO regulations and goals (Federal and/or State goals) apply to a specific project. When a project contains funding from both Federal and State sources, both sets of regulations apply, and the Minnesota Department of Transportation (MnDOT) monitors and reviews projects at both levels.

If the project contains any Federal funding, and has a total dollar value exceeding $10,000, Federal EEO regulations and goals apply (pages 2, 6, 7-8, 9-14, 15, 16-17, 22-26, 27-39). The MnDOT Office of Civil Rights monitors and reviews these projects on behalf of the Federal Highway Administration (FHWA), under Federal statutes (23 USC 140) and rules (23 CFR 230).

If the project contains any State funding, and has a total dollar value exceeding $100,000, State EEO regulations and goals apply (pages 2, 3, 4, 5, 6, 9-14, 16-22). MnDOT's Office of Civil Rights monitors and reviews these projects in conjunction with the Minnesota Department of Human Rights under Minnesota Statutes §363A.36 and its accompanying rules.

MnDOT has established a single review and monitoring process which meets both Federal and State requirements.

Please note that Pages 23-39 of these Special Provisions may be omitted from projects with no Federal funding.

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NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (23 USC 140, 23 CFR 230 and Minnesota Statute §363A.36)

1. The offerer's or bidder's attention is called to the "Minnesota Affirmative Action Requirements" (EEO Page 4), the "Specific Federal Equal Employment opportunity Responsibilities" (EEO Pages 7-8), the "Standard Federal and State Equal Employment Opportunity Construction Contract Specifications" (EEO Pages 9-14), the "Equal Opportunity Clause" (EEO Page 15) and "Required Contract Provisions - Federal-Aid Construction Contracts" (EEO Pages 27-39).

2. The goals and timetables for minority and women participation, expressed in percentage terms of hours of labor for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as shown on EEO Pages 16-17.

   These goals are applicable to all the Contractor's construction work (whether or not it is State or State assisted, Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

   The Contractor's compliance with the regulations in 41 CFR Part 60-4, and/or Minnesota Statutes §363A.36 and its accompanying rules shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) for Federal or federally assisted projects, and Minnesota Statutes §363A.36, and its accompanying rules for State or State assisted projects, and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and women employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority and women employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4 for Federal or federally-assisted projects and/or Minnesota Statutes §363A.36 and its accompanying rules for state or state-assisted projects. Compliance with the goals will be measured against the total work hours performed.

3. If the contract is federally funded, the Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within ten working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. If the contract is state funded, the Contractor shall provide written notification to the Compliance Division, Minnesota Department of Human Rights, Army Corps of Engineers Centre, 190 E 5th Street, Suite 700, St. Paul, Minnesota 55101 within ten working days of award of any construction subcontract in excess of $100,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the Subcontractor; employer identification number of the Subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is the county or counties of the State of Minnesota where the work is to be performed.

NOTICE TO ALL PRIME AND SUBCONTRACTORS
PRE-AWARD REPORTING REQUIREMENTS

In order to ensure compliance with Federal and State laws and regulations (23 USC 140, and 23 CFR 230, and Minnesota Statutes §363A.36) and to ensure Mn/DOT's ability to monitor and enforce compliance efforts, the following requirements apply if the apparent low bid exceeds $ 5,000,000.00:

1) The Apparent Low Bidder ("ALB") must provide to Mn/DOT the "EEO-8 Form" (also entitled "EEO Compliance Review Report"), which must provide detail on the contractor's total company workforce in the State of Minnesota during the twelve month period preceding July 30th of the previous year (Office and/or clerical personnel need not to be included).

2) The ALB must provide to Mn/DOT a work plan for meeting the minority and women employment goals established by the Minnesota Department of Human Rights, for the project in question. The work plan must include, at a minimum (1) how the ALB will incorporate its current minority and women employees in the ALB's efforts to meet the established goals; and (2) a contingency plan if the ALB has determined that its current workforce is not sufficient in order to achieve the established employment goals. If the ALB relies in whole or in part upon unions as a source of employees, then the ALB must (1) include a list of established organizations that are likely to yield qualified minority and women candidates if those union(s) are unable to provide a reasonable flow of minority and women candidates in their work plan; and (2) document the method by which these organizations will refer candidates to the ALB for employment opportunities. All bidders are hereby notified that the U.S. Department of Labor has determined that a contractor will not be excused from complying with the Federal and State laws and regulations cited above based solely on the fact that a contractor has a collective bargaining agreement with a union providing for the union to be the exclusive source of referral and that the union failed to refer minority employees. A contractor may obtain a list of organizations likely to yield qualified minority and women candidates from the Mn/DOT Office of Civil Rights.

3) The ALB must provide to Mn/DOT the ALB's total workforce and labor projections for the project (represented in hours), the ALB's projected total number of minority hours for the project, and the ALB's projected total number of women hours for the project. The details must include the trade(s) that will be utilized in order to complete the project.

The ALB must submit documents as required to comply with this section no later than five business days after the date that bids for the contract are opened. The five day period starts the business day following the date that bids were opened. The required documents must be received prior to Contract Award, and must be sent to the Mn/DOT Office of Civil Rights – 395 John Ireland Blvd., Mail Stop 170 St. Paul, MN 55155-1899. Submittal of the documents described in (1), (2) and (3) is required for contract award to the ALB. The submitted documents will be used as a tool to assist contractors in meeting employment goals; the content itself will not be evaluated for the purpose of determining contract award.

MINNESOTA AFFIRMATIVE ACTION REQUIREMENTS

1. It is hereby agreed between the parties to this contract that Minnesota Statutes, Section §363A.36, and its accompanying rules are incorporated into any contract between these parties based upon this specification or any modification of it. A copy of Minnesota Statutes, Section §363A.36, and its accompanying rules is available upon request from the contracting agency. The Contractor hereby agrees to comply with the rules and relevant orders of the Minnesota Department of Human Rights issued pursuant to the Minnesota Human Rights Act.

2. It is hereby agreed between the parties to this contract that this agency requires that the Contractor meet affirmative action criteria as provided for by Minnesota Statutes §363A.36 and its accompanying rules. It is the intent of the Minnesota Department of Transportation to fully carry out its responsibility for requiring affirmative action, and to implement sanctions for failure to meet these requirements. Failure by a contractor to implement an affirmative action plan, meet project employment goals for minority and women employment or make a good faith effort to do so may result in revocation of his/her Certificate of Compliance or suspension or revocation of the contract (Minnesota Statutes §363A.36).

3. Under the affirmative action obligation imposed by the Human Rights Act, Minnesota Statutes, Section §363A.36, contractors shall take affirmative action to employ and advance in employment minority, female, and qualified disabled individuals at all levels of employment. Affirmative action must apply to all employment practices, including but not limited to hiring, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor shall recruit, hire, train and promote persons in all job titles, without regard to race, color, creed, religion, sex, national origin, marital status, status with regard to public assistance, physical or mental disability, sexual orientation or age except where such status is a bona fide occupational qualification. These affirmative action requirements of the Minnesota Human Rights Act are consistent with but broader than the Federal requirements as covered in this contract.

4. Affirmative Action for disabled workers. The Contractor shall not discriminate against any employee or applicant for employment because of a physical or mental disability in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled individuals without discrimination based upon their physical or mental disability in all employment practices such as employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training (including apprenticeship). In the event of the Contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with Minnesota Statutes, section §363A.36 and the rules and relevant orders of the Minnesota Department of Human Rights pursuant to the Minnesota Human Rights Act.

5. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the commissioner of the Minnesota Department of Human Rights. Such notices shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment minority, women and qualified disabled employees and applicants for employment, and the rights of applicants and employees. **A poster entitled "Contractor Non-discrimination is the Law" may be obtained from: Compliance Unit, Minnesota Department of Human Rights, Freeman Building, 625 Robert Street North, Saint Paul, Minnesota 55155.** (651) 539-1100, TTY 296-1283, Toll Free 1-800-657-3704.

6. The Contractor shall notify each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Minnesota Statutes, section §363A.36 of the Minnesota Human Rights Act, and is committed to take affirmative action to employ and advance in employment minority, women and qualified physically and mentally disabled individuals.

APPROPRIATE WORK PLACE BEHAVIOR ON Mn/DOT CONSTRUCTION PROJECTS UTILIZING STATE FUNDS

It is the Minnesota Department of Transportation's (MnDOT's) policy to provide a workplace free from violence, threats of violence, harassment and discrimination. MnDOT has established a policy of zero tolerance for violence in the workplace. Contractors who perform work on MnDOT construction projects, or local government entities or public agencies utilizing state funds on highway construction projects, shall maintain a workplace free from violence, harassment and discrimination (See definitions, below).

Definitions:

1. Violence is the threatened or actual use of force which results in or has a high likelihood of causing fear, injury, suffering or death. Employees are prohibited from taking reprisal against anyone who reports a violent act or threat.

2. Harassment is the conduct of one employee (toward another employee) which has the purpose or effect of 1) unreasonably interfering with the employee's work performance, and/or 2) creating an intimidating, hostile or offensive work environment. Harassment is not legitimate job-related efforts of supervisor to direct/evaluate an employee or to have an employee improve work performance.

A. Unlawful discriminatory harassment is harassment which is based on these characteristics: race, color, creed, religion, national origin, sex, disability, age, marital status, status with regard to public assistance or sexual orientation. Managers, supervisors and employees shall not take disciplinary or retaliatory action against employees who make complaints of sexual harassment.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, or sexually motivated physical contact, or other verbal or physical conduct or communication of a sexual nature, when submission to that conduct or communication is 1) made a term or condition, either explicitly or implicitly, of obtaining employment; or 2) is used as a factor in decisions affecting an individual's employment; or 3) when that conduct or communication has the purpose or effect of substantially interfering with an individual's employment or creating an intimidating, hostile or offensive work environment, and the employer knows or should have known of the existence of the harassment and fails to take timely and appropriate action. Examples include but are not limited to insulting or degrading sexual remarks or conduct; threats, demands or suggestions that status is contingent upon toleration or acquiescence to sexual advances; displaying in the workplace sexually suggestive objects, publications or pictures, or retaliation against employees for complaining about the behavior cited above or similar behaviors.

B. General harassment is harassment which is not based on the above characteristics. Examples may include, but are not limited to: physically intimidating behavior and/or threats of violence; use of profanity (swearing), vulgarity; ridiculing, taunting, belittling or humiliating another person; inappropriate assignments of work or benefits; derogatory name calling.

3. Discrimination includes actions which cause a person, solely because of race, color, creed, religion, national origin, sex, disability, age, marital status, status with regard to public assistance or sexual orientation to be subject to unequal treatment.

Prime Contractors who work on MnDOT projects shall ensure that their managers, supervisors, foremen/women and employees are familiar with MnDOT's policy on appropriate work place behavior; and shall ensure that their subcontractors are familiar with this policy. Managers, supervisors and foremen/women will respond to, document, and take appropriate action in response to all reports of violence, threats of violence, harassment or discrimination. Failure to comply with this policy may result in cancellation, termination or suspension of contracts or subcontracts currently held and debarment from further such contracts or subcontracts as provided by statute. If you need additional information or training regarding this policy, please contact the Office of Civil Rights at (651) 366-3073.

NOTICE TO ALL PRIME AND SUBCONTRACTORS REPORTING REQUIREMENTS

1. In order to monitor compliance with Federal Statutes 23 USC 140 and 23 CFR 230, and Minnesota Statutes §363A.36, all prime contractors and subcontractors are required to complete a Mn/DOT Monthly Employment Compliance Report each month for each project (Form EEO-13, sample copy at EEO Pages 20-21.) Prime contractors are also required to complete a Contractor Employment Data Report (Form EEO-12, sample copy at EEO Pages 18-19) once prior to work commencing on the project, unless one has been completed already within the calendar year.

   The prime contractor of each project collects Monthly Employment Compliance Reports from each subcontractor who performed work during the month, and completes a Monthly Employment Compliance Report on its own work force. **For the month of July only, an EEO-13 is required for each payroll period within the month of July**. The prime contractor submits the EEO-13 forms to the Mn/DOT Project Engineer by the 15th day of the subsequent month.

   Failure to submit the required reports in the allowable time frame will be cause for the imposition of contract sanctions.

   It is the intent of Mn/DOT to implement monitoring measures on each project to ensure that each prime contractor and subcontractor is promoting the full realization of equal employment opportunities. Any project may be scheduled for an in depth on-site contract compliance review. During the scheduled on-site review, the Contractor will be required to provide to Mn/DOT documentation of its "good faith efforts" as shown in EEO Pages 10-13, at 7 a-p of this contract.

2. If a Federally funded project requires On-the-Job-Training (OJT) participation, information is provided in the contract and can be located by referring to the Table of Contents for Division S. (OJT is also listed as a bid line item under Trainees.) When a contract requires OJT participation, the Prime Contractor shall submit a training plan as indicated in the Proposal. The training plan shall include the job classification titles of trainees, planned training activities and the approximate start date of trainees.

3. When a Contractor selects a trainee applicant for OJT, the Contractor completes an On the Job Training Program-Trainee Assignment form (sample copy at EEO Page 23) and submits it to the Contract Compliance Specialist (CCS) assigned to the project for approval. The CCS notifies the Contractor and Project Engineer when the applicant is approved.

4. Hours of work performed by OJT employees shall be documented on a monthly basis on the Certification of On-The-Job Training Hours form, (Mn/DOT Form No. 21860, sample copy at EEO Page 24). The Contractor shall submit the original and one copy to the Project Engineer, and one copy to the CCS assigned to the project.

Do not remove forms from this contract. Please duplicate forms from the copies in this contract, or the Mn/DOT Office of Civil Rights will provide these forms upon request. Please call the Office of Civil Rights, (651) 366-3073.

SPECIFIC FEDERAL EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 CFR 230, Subpart A, Appendix A, FAPG June 6, 1996)

1. General.
a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal opportunity as required by Executive Order 11246 and Executive Order 11375 are set forth in Required contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of title 23, U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.
b. The contractor will work with the State highway agencies and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.
c. The contractor and all his/her subcontractors holding subcontracts not including material suppliers, of $10,000 or more, will comply with the following minimum specific requirement activities of equal employment Opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The contractor will include these requirements in every subcontract of $10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. Equal Employment Opportunity Policy. The contractor will accept as his operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex, or national origin, and to promote their full realization of equal employment through a positive continuing program:

It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, or national origin. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre apprenticeship, and/or on-the-job training.

3. Equal Employment Opportunity Officer. The contractor will designate and make known to State highway agency contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy.
a. All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action will be made fully cognizant of, and will implement, the contractor's equal employment opportunity policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
(1). Periodic meetings of supervisory and personnel office staff will be conducted before the start of work and then not less often than once every six months, at which time the contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.
(2). All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official, covering all major aspects of the contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the contractor.
(3). All personnel who are engaged in direct recruitment for the project will be instructed by the EEO officer or appropriate company official in the contractor's procedures for locating and hiring minority group employees.
b. In order to make the contractor's equal employment policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the contractor will take the following actions:
(1). Notices and posters setting forth the contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
(2). The contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment.
a. When advertising for employees, the contractor will include in all advertisements for employees the notation "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
b. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the contractor will, through his/her EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where the implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
c. The contractor will encourage his present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

6. Personnel Actions. Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, or national origin. The following procedures shall be followed:
a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do

SPECIFIC FEDERAL EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES *(con=t)*

not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his/her obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all his avenues of appeal.

7. Training and Promotion.
a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees and applicants for employment.
b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e. apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Training Special Provision is provided under this contract, this subparagraph will be superseded as indicated in Attachment 2.
c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
d. The Contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. Unions. If a contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group members and women so that they may qualify for higher paying employment.
b. The contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin.
c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the State highway department and shall set forth what efforts have been made to obtain such information.
d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, or national origin; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents thecontractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the State highway agency.

9. Subcontracting.
a. The contractor will use his best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of minority-owned construction firms from State highway agency personnel.
b. The contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

10. Records and Reports:
a. The contractor shall keep such records as necessary to determine compliance with the contractor's equal employment opportunity obligations. The records kept by the contractor will be designed to indicate:
(1) The number of minority and non minority group members and women employed in each work classification on the project.
(2) The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractor's who rely in whole or in part on unions as a source of their work force),
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and
(4) The progress and efforts being made in securing the services of minority group subcontractors with meaningful minority and female representation among their employees.
b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the State highway agency and the Federal Highway Administration.
c. The contractors will submit an annual report to the State highway agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR-1391. If on-the-job training is being required by a "Training Special Provision", the contractor will be required to furnish Form FHWA 1409.

STANDARD FEDERAL AND STATE EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (41 CFR 60-4.3 and Minnesota Statute §363A.36)

Unless noted, the following apply to both Federal/federally assisted projects and State/state assisted projects. Item 3 applies to Federal/federally assisted projects only

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c. "Employer Identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 ($100,000 for State projects) the provisions of these specifications and the Notice which contains the applicable goals for minority and women participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4, 5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work on the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7(a) to (p) of these specifications (itemized as 4 [a] to [o], Minnesota Rules

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(con't)*

5000.3535). The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minorities and utilization the Contractor should (shall, for State or state assisted projects) reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor shall make substantially uniform progress toward its goals in each craft during the period specified. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Federal goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any office of Federal Contract Compliance programs or from Federal procurement contracting officers. State goals are published periodically in the State Register in notice form, and may be obtained from the Minnesota Department of Human Rights or the Minnesota Department of Transportation Office of Civil Rights. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union, with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications and Executive Order 11246 and its associated rules and regulations for Federal or federally assisted projects, and Minnesota Statutes, Section §363A.36 of the Minnesota Human Rights Act, or the rules adopted under the Act for State or state assisted projects.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained according to training programs approved by the Minnesota Department of Human Rights, the Minnesota Department of Labor and Industry, or the United States Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications must be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following (referred to in Minnesota Rules 5000.3535 as items 4(a) to (o):

(a) Ensure and maintain, or for State or state assisted projects make a good faith effort to maintain, a working environment free of harassment, intimidation, and coercion at all sites and in all facilities at which the Contractor's employees are assigned to work. For

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(con't)*

Federal or federally assisted projects, the Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or women individuals working at such sites or in such facilities.

(b) Establish and maintain a current list of minority and women recruitment sources, provide written notification to minority and women recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(c) Maintain a current file of the names, addresses, and telephone numbers of each minority and woman off-the-street applicant and minority or woman referral from a union, a recruitment source, or community organization and of what action was taken with respect to each individual. If the individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the Contractor may have taken.

(d) Provide immediate written notification to the commissioner of the Minnesota Department of Human Rights for State or state assisted projects, or the director of the Office of Federal Contract Compliance for Federal or federally assisted projects, when the union, or unions with which the Contractor has a collective bargaining agreement, has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(e) Develop on-the-job training opportunities and/or participate in training programs for the areas which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the State of Minnesota for State or state assisted projects or the Department of Labor, for Federal or federally assisted projects. The Contractor shall provide notice of these programs to the sources compiled under (b).

(f) Disseminate the Contractor's equal employment opportunity policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its equal employment opportunity obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and women employees at least once a year; and by posting the company equal employment opportunity policy on bulletin boards accessible to all employees at each location where construction work is performed.

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(con't)*

(g) Review, at least annually, the company's equal employment opportunity policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions; including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the first day of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(h) Disseminate the Contractor's equal employment opportunity policy externally by including it in any advertising in the news media, specifically including minority and women news media, and providing written notification to and discussing the Contractor's equal employment opportunity policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

(i) Direct its recruitment efforts, both oral and written, to minority, women, and community organizations; to schools with minority and women students; and to minority and women recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(j) Encourage present minority and women employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and women youth, both on the site and in other areas of a Contractor's work force.

(k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3. (This requirement applies only to Federal and federally assisted projects.)

(l) Conduct, at least annually, an inventory and evaluation at least of all minority and women personnel for promotional opportunities; and encourage these employees to seek or to prepare for, through appropriate training, such opportunities. (This is Item 4(k) in Minnesota Rules.)

(m) Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the equal employment opportunity policy and the Contractor's obligations under these specifications are being carried out. (This is item 4(l) in Minnesota Rules.)

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(con't)*

(n) Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes. (This is item 4(m) in Minnesota Rules.)

(o) Document and maintain a record of all solicitations or offers for subcontracts from minority and women construction contractors and suppliers, including circulation of solicitations to minority and women contractor associations and other business associations. (This is item 4(n) in Minnesota Rules.)

(p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's equal employment opportunity policies and affirmative action obligations. (This is item 4(o) in Minnesota Rules.)

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7(a) to (p) for Federal or federally assisted projects, and 4(a)-(o) for State or state assisted projects). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7(a) to (p) or 4(a) to (o) of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and women work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor however, is required to provide equal employment opportunity and to take affirmative action for all minority groups both male and female, and all women both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order for Federal or federally assisted projects, or Minnesota Rules for State or state assisted projects, if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order or Minnesota Rules part 5000.3520 if a specific minority group is under-utilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, creed, religion, sex, or national origin. Minnesota Statutes §363A.36, part 5000.3535 (Subp. 7) also prohibits discrimination with regard to marital status, status with regard to public assistance, disability, age, or sexual orientation.

STANDARD FEDERAL AND STATE EEO CONSTRUCTION CONTRACT SPECIFICATIONS *(con't)*

11. The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts under the federal Executive Order 11246 or a local human rights ordinance, or whose certificate of compliance has been suspended or revoked pursuant to Minnesota Statutes, Section §363A.36.

12. The Contractor shall carry out such sanctions for violation of these specifications and of the equal opportunity clause, including suspension, termination, and cancellation of existing contracts as may be imposed or ordered pursuant to Minnesota Statutes, Section §363A.36, and its implementing rules for State or state assisted projects, or Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs for Federal or federally assisted projects. Any contractor who fails to carry out such sanctions shall be in violation of these specifications and Minnesota Statutes, Section §363A.36, or Executive Order 11246 as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications (paragraph 4 in Minnesota Rules 5000.3535), so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of these Specifications or Minnesota Statutes, Section §363A.36 and its implementing rules, or Executive Order 11246 and its regulations, the commissioner or the director shall proceed in accordance with Minnesota Rules part 5000.3570 for State or state assisted projects, or 41 CFR 60-4.8 for Federal or federally assisted projects.

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company equal employment opportunity policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Minnesota Department of Human Rights or the Government, and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (for example, mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing provided in this part shall be construed as a limitation upon the application of other state or federal laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents.

EQUAL OPPORTUNITY CLAUSE

(41 CFR Part 60-1.4 b, 7-1-96 Edition)

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and, selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Highway Agency (SHA) setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with all provisions of Executive Order 11246, Equal Employment Opportunity, dated September 24, 1965, and of the rules, regulations (41 CFR Part 60), and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order 11246 and by rules, regulations, and orders of the Secretary of Labor, pursuant thereto, and will permit access to its books, records, and accounts by the Federal Highway Administration (FHWA) and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract, or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7. The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraph (1) through (7) in every subcontract or purchase order so that such provisions will be binding upon each subcontractor or vendor, unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246. The Contractor will take such action with respect to any subcontract or purchase order as the Secretary of Labor, SHA, or the Federal Highway Administration (FHWA) may direct as a means of enforcing such provisions, including sanctions for noncompliance. In the event a contractor becomes a party to litigation by a subcontractor or vendor as a result of such direction, the contractor may request the SHA to enter into such litigation to protect the interest of the State. In addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, that if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

Minority and Women Employment Goals

County	Federal Goals		State Goals	
	Minority Goal	Women Goal	Minority Goal	Women Goal
Aitkin	2.2%	6.9%	5%	6%
Anoka	2.9%	6.9%	22%	6%
Becker	0.7%	6.9%	6%	6%
Beltrami	2.0%	6.9%	6%	6%
Benton	0.5%	6.9%	3%	6%
Big Stone	2.2%	6.9%	4%	6%
Blue Earth	2.2%	6.9%	4%	6%
Brown	2.2%	6.9%	4%	6%
Carlton	1.2%	6.9%	5%	6%
Carver	2.9%	6.9%	22%	6%
Cass	2.2%	6.9%	6%	6%
Chippewa	2.2%	6.9%	4%	6%
Chisago	2.9%	6.9%	3%	6%
Clay	0.7%	6.9%	6%	6%
Clearwater	2.0%	6.9%	6%	6%
Cook	1.2%	6.9%	5%	6%
Cottonwood	0.8%	6.9%	4%	6%
Crow Wing	2.2%	6.9%	6%	6%
Dakota	2.9%	6.9%	22%	6%
Dodge	0.9%	6.9%	4%	6%
Douglas	2.2%	6.9%	6%	6%
Faribault	2.2%	6.9%	4%	6%
Fillmore	0.9%	6.9%	4%	6%
Freeborn	0.9%	6.9%	4%	6%
Goodhue	2.2%	6.9%	4%	6%
Grant	2.2%	6.9%	6%	6%
Hennepin	2.9%	6.9%	32%	6%
Houston	0.6%	6.9%	4%	6%
Hubbard	2.0%	6.9%	6%	6%
Isanti	2.2%	6.9%	3%	6%
Itasca	1.2%	6.9%	5%	6%
Jackson	0.8%	6.9%	4%	6%
Kanabec	2.2%	6.9%	3%	6%
Kandiyohi	2.2%	6.9%	3%	6%
Kittson	2.0%	6.9%	6%	6%
Koochiching	1.2%	6.9%	5%	6%
Lac Qui Parle	2.2%	6.9%	4%	6%
Lake	1.2%	6.9%	5%	6%
Lake of the Woods	2.0%	6.9%	6%	6%
Le Sueur	2.2%	6.9%	4%	6%
Lincoln	0.8%	6.9%	4%	6%
Lyon	0.8%	6.9%	4%	6%

County	Federal Goals		State Goals	
	Minority Goal	Women Goal	Minority Goal	Women Goal
Mahnomen	2.0%	6.9%	6%	6%
Marshall	2.0%	6.9%	6%	6%
Martin	2.2%	6.9%	4%	6%
McLeod	2.2%	6.9%	3%	6%
Meeker	2.2%	6.9%	3%	6%
Mille Lacs	2.2%	6.9%	3%	6%
Morrison	2.2%	6.9%	6%	6%
Mower	0.9%	6.9%	4%	6%
Murray	0.8%	6.9%	4%	6%
Nicollet	2.2%	6.9%	4%	6%
Nobles	0.8%	6.9%	4%	6%
Norman	2.0%	6.9%	6%	6%
Olmsted	1.4%	6.9%	4%	6%
Otter Tail	2.2%	6.9%	6%	6%
Pennington	2.0%	6.9%	6%	6%
Pine	2.2%	6.9%	3%	6%
Pipestone	0.8%	6.9%	4%	6%
Polk	1.2%	6.9%	6%	6%
Pope	2.2%	6.9%	6%	6%
Ramsey	2.9%	6.9%	32%	6%
Red Lake	2.0%	6.9%	6%	6%
Redwood	0.8%	6.9%	4%	6%
Renville	2.2%	6.9%	3%	6%
Rice	2.2%	6.9%	4%	6%
Rock	0.8%	6.9%	4%	6%
Roseau	2.0%	6.9%	6%	6%
Scott	2.9%	6.9%	22%	6%
Sherburne	0.5%	6.9%	3%	6%
Sibley	2.2%	6.9%	4%	6%
St. Louis	1.0%	6.9%	5%	6%
Stearns	0.5%	6.9%	3%	6%
Steele	0.9%	6.9%	4%	6%
Stevens	2.2%	6.9%	6%	6%
Swift	2.2%	6.9%	4%	6%
Todd	2.2%	6.9%	6%	6%
Traverse	2.2%	6.9%	6%	6%
Wabasha	0.9%	6.9%	4%	6%
Wadena	2.2%	6.9%	6%	6%
Waseca	2.2%	6.9%	4%	6%
Washington	2.9%	6.9%	22%	6%
Watonwan	2.2%	6.9%	4%	6%
Wilkin	0.7%	6.9%	6%	6%
Winona	0.6%	6.9%	4%	6%
Wright	2.9%	6.9%	3%	6%
Yellow Medicine	2.2%	6.9%	4%	6%

Minnesota Department of Transportation
Office of Civil Rights
Contractor Employment Data

1. Contractor Name and Address:

Phone: _____

	2. Employment Data a) Name: Last Name, First Name, MI	**b) Social Security #**	c) New Hire (Y or N)	d) Ethnicity	e) Gender (M or F)	f) Trade/Foreman, Supervisors, Managers	g) Level (A, J, or T)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
25.							
26.							
27.							

If you have submitted this form at any time during this calendar year, you do not need to submit another one.

INSTRUCTIONS FOR EEO-12
CONTRACTOR EMPLOYMENT DATA

This form should be submitted at the Pre-Con to the Project Engineer prior to the start of your first MnDOT construction project for the calendar year. (Prime and Subs)

1. Contractor Name and Address self-explanatory.

2. Employment Data information will coincide with your employment records.

   2a. Name should be listed First Name, Middle Initial, and Last Name. This will enable MnDOT EEO staff to readily identify individuals on all projects.

   2b. Social Security Number self-explanatory.

   2c. New Hire is to be indicated with a "Y" for Yes or an "N" for No. "New Hire" is an employee who has not worked for you in any capacity or on any other project within the current calendar year.

   2d. Ethnicity can be indicated by Black (B), Hispanic (H), American Indian/Alaskan Native (AI), Asian/Pacific Islander (AP), or White (W).

   2e. Gender is to be indicated with an "M" for Males or an "F" for Females.

   2f. Trade/Foreman, Supervisors, Managers self-explanatory. List trade that applies unless the employee fits one of the other three categories.

   2g. Level "A" is for an Apprentice, "J" is for a Journey Worker, and "T" is for a MnDOT approved Trainee.

If you have questions about filling out this form, contact the Office of Civil Rights at (651) 366-3073.
(Please make copies as you need them.)

This information can be submitted electronically via the web, through MnDOT's Work force Information Tracking Initiative (WITI) Program. To open a free account to gain access to WITI or to find out more about this possibility please contact MnDOT's Office of Civil Rights at (651) 366-3015.

If you have submitted this form at any time during this calendar year, you do not need to submit another one.

Minnesota Department of Transportation

Office of Civil Rights
Monthly Employment Compliance Report
EEO-13

1. SP ☐ **SAP** ☐ (Check one) **SP#**	**3. Contractor Name:**	**4. Prime** ☐ **Subcontractor** ☐ (check one)
County or City	**Federal Tax ID:** Street Address:	5. Dollar Amount of Contract:
2. Reporting Period _____ to _____	City, State Zip	6. Percent of Completion:

7. Employment Data a) Name: Last, First Middle Initial	b) Social Security #	c) New Hire (Y or N)	d) Ethnicity	e) Gender M or F)	Trade/Foreman, Supervisors, Managers	g) Level (A, J or T)	h) Hours Worked This Period
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							

8. Contract Goals			**9. Prepared by:** (Signature)	**10. Reviewed by:** (Signature)
MINNESOTA GOALS		**%OBTAINED**		
_____ %	Minority	_____ %	Print Name:	Print Name:
			Title:	Title:
_____ %	Women	_____ %	Date:	Date:
			Phone: Fax:	Phone: Fax:

INSTRUCTIONS FOR EEO-13

MONTHLY EMPLOYMENT COMPLIANCE REPORT

1.-5. Self-explanatory – State Project #, county project is located in, are you a prime or sub, and contract value.

6. Percent of Completion is the estimated percentage of work completed including this reporting period.

7. Employment Data information will coincide with your employment records. All professional, supervisory and managerial hours actually worked on the project site must be included, whether or not they appear on the certified payroll.

   7a. Name should be listed Last Name, First Name, and Middle Initial. This will enable MnDOT EEO staff to readily identify individuals on all projects.

   7b. Social Security Number self-explanatory.

   7c. New Hire is to be indicated with a "Y" for Yes or an "N" for No. "New Hire" is an employee who has not worked for you in any capacity or on any other project within the current calendar year.

   7d. Ethnicity can be indicated by Black (B), Hispanic (H), American Indian/Alaskan Native (AI), Asian/Pacific Islander (AP), or White (W).

   7e. Gender is to be indicated with an "M" for Males or an "F" for Females.

   7f. Trade/Foreman, Supervisors, Managers list the trade that applies unless the employee fits one of the other three categories.

   7g. Level "A" is for an Apprentice, "J" is for a Journey Worker, and "T" is for a MnDOT approved Trainee.

   7h. Hours Worked for This Period will be all hours worked by the individual, for each trade, during the specified reporting period.

8. Contract Goals are the percent of total project hours to be worked by minority and women employees. The goals are determined by the geographic location and source of funding for the project. Projects in excess of $100,000 with any State funding must meet the State Employment Goals. Projects in excess of $10,000 with any Federal funding must meet the Federal Employment Goals. (See chart on EEO Pages 16-17.) Minority and women employee hours shall be distributed evenly throughout the length of the project and in every trade and craft that performs work on the project.

   % Obtained is the percent of the total project hours worked by minority and women employees, up to and including this reporting period.

9. Prepared by Contractor Designee is the signature of the prime or subcontractor's EEO officer/designee.

10. Reviewed by Project Engineer is the signature of the MnDOT staff monitoring the project.

If you have questions about filling out this form, contact the Office of Civil Rights at (651) 366-3073.
(Please make copies as you need them.)

This information can be submitted electronically via the web, through MnDOT's Workforce Information Tracking Initiative (WITI) Program. To open a free account to gain access to WITI or to find out more about this possibility please contact MnDOT's Office of Civil Rights at (651) 366-3321.

EEO COMPLIANCE REVIEW REPORT

Total Company Workforce
(For 12 Month Period Preceding July 30th of the previous year)

Name and Address of Contractor

_____

_____

_____

Name and Title of Corporate Officer _____

Name of EEO Officer _____

Job Categories	Total Employees		Total Minorities		Blacks		Asian/ Pacific Is.		American Indian		Hispanic		On-the-Job Trainees	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Officials (Managers)														
Supervisors														
Foremen/Women														
Clerical														
Equipment Operators														
Mechanics														
Truck Drivers														
Iron Workers														
Carpenters														
Cement Masons														
Electricians														
Pipefitters & Plumbers														
Painters														
Laborers														
Total														
On-the-Job Trainees														

MINNESOTA DEPARTMENT OF TRANSPORTATION

ON-THE-JOB TRAINING PROGRAM
TRAINEE ASSIGNMENT

SP #: _____ Location: _____ District: _____

Project Engineer: _____ Phone: ( ) _____

Prime Contractor: _____ Phone: ( ) _____

Address: _____

City: _____ State: _____ Zip: _____

EEO Officer: _____ Project Manager: _____

Tel: _____

Training Contractor: _____ Phone: ( ) _____

Address: _____

City: _____ State: _____ Zip: _____

EEO Officer: _____ Project Manager: _____

Tel: _____

TRAINEE

Job Title or
Trade Classification: _____ Number of Training
Hours on this Project: _____

Name: _____ S.S.#: _____

Address: _____ Phone: ( ) _____

City: _____ State: _____ Zip: _____

EEO Officer: _____ Project Manager: _____

Tel: _____

Approximate Start Date: _____

Approximate Completion Date: _____

Is the trainee a member of a certified apprenticeship program?

If YES, verify with Apprenticeship Form or Indenture Number: _____

1. Ethnic Background: **Hispanic** _____; **Black** _____; **Asian/Pacific Islander** _____; **White** _____;
Am. Ind/Alaskan _____ (Verify with Tribal I.D. # or Affiliation _____).

2. **Male**; _____ **Female**; _____.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF CIVIL RIGHTS

CERTIFICATION OF ON-THE-JOB TRAINING HOURS
FEDERAL-AID-PROJECTS

Contractor: *submit original and one copy monthly to the project engineer*

CONTRACTOR	REPORTING PERIOD:
ADDRESS	S.P. NO. (LOW):
	F.P. NO.:

TRAINEE	HOURS WORKED PREVIOUSLY	HOURS WORKED THIS PERIOD	TOTAL HOURS TO DATE

AMOUNT OF CLAIM _____ HOURS @ _____ PER HOUR = $ _____

Progress of Trainee(s) ☐Excellent ☐Very Good ☐Good ☐Below Good

COMMENTS (Please detail any supplementary training offered):

_____
_____
_____
_____
_____

CONTRACTOR:

The undersigned contractor hereby certifies that the listed employees are bonafide trainees as required by the On-the-Job Training Special Provision and that they have worked the hours as reported above.

_____

Contractor Signature/Title *Date*

PROJECT ENGINEER:

I hereby certify that the On-the-Job training hours reported above have been reviewed and found correct.

_____

Engineer Signature/Title *Date*

On-the-Job Training (OJT) Program Approval Form

The Special Provisions of the contract clearly indicate that training and upgrading of minorities and women toward Journey worker status is the primary objective of the training provisions.

We,		, submit the following training program for (Trade) for approval.
	(Name of Contractor)	

I. Project Information

Contractor Name	S.P. #	County	Prime	Sub
Address	City	State	Zip	
Contact Person/ EEO Officer		Phone #	e-mail address	
Project Goals				
Trainees	Hours			

II. Project Training Plan Information

Trade	# of Trainees Projected	Hourly Assignment per Trainee	Estimated Start Date	Estimated End Date	Recruiting Resource

Planned Training Activities

III. Contractor Acknowledgment Statement.
I understand and will comply fully with the plans and specifications under which this training is being performed, and will report subsequent revisions to the training program as changes occur.

Contractor's Representative Signature	Title	Date

IV. Instruction for the Contractor.

The contractor's proposed training programs must be documented on this form and submitted as indicated in the Proposal. Your Company's compliance with this specification will factor into any and all employment related "Good Faith Effort" determinations.

07/12

On-the-Job Training Program
Trainee Termination Form

Contractor Name		County	Prime	Sub
Address	City	State	Zip	
EEO Officer		Phone #	e-mail address	
Trainee Name		Phone #	Social Security No.	
Address	City	State	Zip	

Race/Ethnicity

☐ Hispanic	☐ White	☐ Asian
☐ Black	☐ American Indian	☐ Other

Gender		Classification/Trade		S.P. #
☐ Female	☐ Male			
Start Date	Termination Date	Hours Assigned	Hrs Completed	

Reason for Termination/Separation/Layoff:

- ☐ Construction phase completed
- ☐ Death
- ☐ Fired (please explain below)
- ☐ Illness/health problems
- ☐ Lack of transportation and /or travel distance
- ☐ Military duty
- ☐ Relocated
- ☐ Personal
- ☐ Quit to work for another company
- ☐ Other (please explain below)

Please provide comments:

Contractor's Representative Signature | Title | Date

MAIL or Fax THE ORIGINAL and MAINTAIN COPY:
395 John Ireland Boulevard
St. Paul, MN 55155-1899
Office of Civil Rights M.S. 170
On-The –Job Training Coordinator
Fax # 651/366-3129

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS
Form-1273
(52 FR 36920, October 2, 1987, revised October 21, 1993, FHWA Electronic Version May 1, 2012)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

REQUIRED CONTRACT PROVISIONS (cont.)

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

REQUIRED CONTRACT PROVISIONS (cont.)

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

REQUIRED CONTRACT PROVISIONS (cont.)

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of

REQUIRED CONTRACT PROVISIONS (cont.)

this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain

REQUIRED CONTRACT PROVISIONS (cont.)

written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

REQUIRED CONTRACT PROVISIONS (cont.)

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

REQUIRED CONTRACT PROVISIONS (cont.)

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its

REQUIRED CONTRACT PROVISIONS (cont.)

own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

REQUIRED CONTRACT PROVISIONS (cont.)

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

REQUIRED CONTRACT PROVISIONS (cont.)

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently

REQUIRED CONTRACT PROVISIONS (cont.)

debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS

PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

MN REVENUE WITHHOLDING FORM IC 134

MINNESOTA · REVENUE **IC134**

Withholding Affidavit for Contractors

This affidavit must be approved by the Minnesota Department of Revenue before the state of Minnesota or any of its subdivisions can make final payment to contractors.

Please type or print clearly. This will be your mailing label for returning the completed form.

Company name	Daytime phone	Minnesota tax ID number
Address	Total contract amount $	Month/year work began
City State Zip Code	Amount still due $	Month/year work ended

Project information

Project number | Project location

Project owner | Address | City | State | Zip code

Did you have employees work on this project? ☐ Yes ☐ No If no, who did the work?

Contractor type

Check the box that describes your involvement in the project and fill in all information requested.

☐ **Sole contractor**

☐ **Subcontractor**

Name of contractor who hired you

Address

☐ **Prime contractor**—If you subcontracted out any work on this project, all of your subcontractors must file their own IC134 affidavits and have them certified by the Department of Revenue *before* you can file your affidavit. For each subcontractor you had, fill in the information below and attach a copy of each subcontractor's certified IC134. If you need more space, attach a separate sheet.

Business name	Address	Owner/Officer

Sign here

I declare that all information I have filled in on this form is true and complete to the best of my knowledge and belief. I authorize the Department of Revenue to disclose pertinent information relating to this project, including sending copies of this form, to the prime contractor if I am a subcontractor, and to any subcontractors if I am a prime contractor, and to the contracting agency.

Contractor's signature | Title | Date

Mail to: Minnesota Revenue, Mail Station 6610, St. Paul, MN 55146-6610

Certificate of Compliance

Based on records of the Minnesota Department of Revenue, I certify that the contractor who has signed this certificate has fulfilled all the requirements of Minnesota Statutes 290.92 and 270C.66 concerning the withholding of Minnesota income tax from wages paid to employees relating to contract services with the state of Minnesota and/or its subdivisions.

Department of Revenue approval *Date*

Stock No. 5000134 (Rev. 1/07)

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

Instructions for Form IC134

Who must file

If you are a prime contractor, a contractor or a subcontractor who did work on a project for the state of Minnesota or any of its local government subdivisions — such as a county, city or school district — you must file Form IC134 with the Minnesota Department of Revenue.

This affidavit must be certified and returned before the state or any of its subdivisions can make final payment for your work.

If you're a prime contractor and a subcontractor on the same project

If you were hired as a subcontractor to do work on a project, and you subcontracted all or a part of your portion of the project to another contractor, you are a prime contractor as well. Complete both the subcontractor and prime contractor areas on a single form.

When to file

The IC134 cannot be processed until you finish the work. If you submit the form before the project is completed, it will be returned to you unprocessed. Mail Form IC134 to the address at the bottom of the form.

If you are a subcontractor or sole contractor, send in the form when you have completed your part of the project.

If you are a prime contractor, send in the form when the entire project is completed and you have received certified affidavits from all of your subcontractors.

How to file

If you have fulfilled the requirements of Minnesota withholding tax laws, the Department of Revenue will sign your affidavit and return it to you.

If any withholding payments are due to the state, Minnesota law requires certified payments before we approve the IC134.

Submit the certified affidavit to the government unit for which the work was done to receive your final payment. If you are a subcontractor, submit the certified affidavit to your prime contractor to receive your final payment.

Minnesota tax ID number

You must enter your Minnesota tax ID number on the form. You must have a Minnesota tax ID number if you have employees who work in Minnesota.

If you don't have a Minnesota ID number, you must apply for one. Call 651-282-5225.

An applications (Form ABR) is also available on our website at www.taxes.state.mn.us.

If you have no employees and did all the work yourself, you do not need a Minnesota tax ID number. If this is the case, enter your Social Security number in the space for Minnesota tax ID number and explain who did the work.

Information and assistance

If you need help or more information to complete this form, call 651-282-9999.

Additional forms are available on our website at www.taxes.state.mn.us or by calling 651-296-4444. TTY: Call 711 for Minnesota Relay.

We'll provide information in other formats upon request to persons with disabilities.

Use of Information

The Department of Revenue needs all the information to determine if you have met all state income tax withholding requirements. If all required information is not provided, the IC134 will be returned to you for completion.

All information on this affidavit is private by state law. It cannot be given to others without your permission, except to the Internal Revenue Service, other states that guarantee the same privacy and certain government agencies as provided by law.

FORM OF PROPOSAL

To the City of Rochester Council Members:

According to the advertisement of the Rochester City Council inviting proposals for the improvement of the section of highway hereinbefore named, and in conformity with the Contract, Plans, Specifications and Special Provisions pertaining thereto, all on file in the office of the Auditor of the City of Rochester:

(I)(We) hereby certify that (I am)(we are) the only person(s) interested in this proposal as principal(s); that this proposal is made and submitted without fraud or collusion with any other person, firm or corporation at all; that an examination has been made of the site of the work and the Contract form, with the Plans, Specifications and Special Provisions for the improvement.

(I)(We) understand that the quantities of work shown herein are approximate only and are subject to increase or decrease; that all quantities of work, whether increased or decreased within the limits specified in MnDOT 1903, are to be done at the unit prices shown on the attached schedule; that, at the time of opening bids, totals only will be read, but that comparison of bids will be based on the correct summation of item totals obtained from the unit prices bid, as provided in MnDOT 1301.

(I)(We) propose to furnish all necessary machinery, equipment, tools, labor and other means of construction and to furnish all materials specified, in the manner and at the time prescribed, all according to the terms of the Contract and Plans, Specifications, and the Special Provisions forming a part of this.

(I)(We) further propose to do all Extra Work that may be required to complete the contemplated improvement, at unit prices or lump sums to be agreed upon in writing before starting such work, or if such prices or sums cannot be agreed upon, to do such work on a Force Account basis, as provided in MnDOT 1904.

(I)(We) further propose to execute the form of Contract within 10 days after receiving written notice of award, as provided in MnDOT 1306.

(I)(We) further propose to furnish a payment bond equal to the Contract amount, and a performance bond equal to the Contract amount, with the aggregate liability of the bond(s) equal to twice the full amount of the Contract if the contract is less than or equal to five million dollars ($5,000,000.00), or if the contract is in excess of five million dollars ($5,000,000.00) the aggregate liability shall be equal to the amount of the contract, as security for the construction and completion of the improvement according to the Plans, Specifications and Special Provisions as provided in MnDOT 1305.

(I)(We) further propose to do all work according to the Plans, Specifications and Special Provisions, and to renew or repair any work that may be rejected due to defective materials or workmanship, before completion and acceptance of the Project by the City of Rochester.

Page 1

(I)(We) agree to all provisions of Minnesota Statutes, Section 181.59.

(I)(We) further propose to begin work and to prosecute and complete the same according to the time schedule set forth in the Special Provisions for the improvement.

(I)(We) assign to the City of Rochester all claims for overcharges as to goods and materials purchased in connection with this Project resulting from antitrust violations that arise under the antitrust laws of the United States and the antitrust laws of the State of Minnesota. This clause also applies to subContractors and first tier suppliers under this Contract.

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

ABBREVIATIONS OF SCHEDULE OF PRICES

NOTICE TO BIDDERS

Particular note should be made in regard to the clarity of numerals (figures) and to the procedure for alterations and the required certificate as directed by Section 1301.

The following abbreviations may be used in item description and unit of measure in the Schedule of Prices.

A	Arch
A-S	Antiseepage
AB	Asbestos Bonded
ACT	Actuated
AGG	Aggregate
ALUM	Aluminum
ASB	Asbestos
ASPH	Asphaltic
ASSY	Assemblies
B+B	Balled & Burlapped
BC	Bituminous Coated
BIT	Bituminous
BLDG	Building
BR	Bridge
CAL	Caliper P-A
CB	Catch Basin
CEM	Cement
C and G	Curb and Gutter
CI	Cast Iron
C-I-P	Cast-in-Place PREC
CL	Class
COMM	Commercial
CONC	Concrete
COND	Conductor
CONN	Connection
CONST	Construct
CONT	Continuously RMC
CP	Cattle Pass
CTD	Coated RDWY
CU FT	Cubic Feet
CU YD	Cubic Yard
CULV	Culvert SPE
CWT	Hundred Weight
DES	Design SQ YD
DBL	Double STA
DI	Drop Inlet
DIAM	Diameter
DRWY	Driveway
EXC	Excavation
EXP	Expansion
FAB	Fabric
FE	Fence
FERT	Fertilizer
F+I	Furnish & Install
FOUND	Foundation
FT LG	Feet Long
FURN	Furnish
GA	Gauge UNDERGRD
GRAN	Granular
HI	High
INP	In Place
INST	Install
JA	Jacked
LIN FT	Linear Feet
LG	Long
MAINT	Maintenance
MATL	Material
MGM	1000 Board Feet
MET	Metal
MOD	Modification
MPA	Metal Pipe Arch
MTD	Mounted
NON	MET Non Metallic
NON PERF	Non-Perforated
NON REINF	Non-Reinforced
OH	Overhead
Pipe-Arch	
PAVT	Pavement
PERF	Perofrated
PL	Plate
PNEUM	Pneumatic
Precast	
PREST	Prestressed
PVC	Poly Vinyl Chloride
RCPA	Reinforced Concrete Pipe Arch
REINF	Reinforced
RELO	Relocation
RESTOR	Restoration
Rigid Metallic Conduit	
RNMC	Rigid Non Metallic Conduit
Roadway	
S-G	Sand& Gravel
SIG	Signal
Special	
SQ FT	Square Feet
Square Yard	
Station	
STD	Standard
STL	Steel
STKPL	Stockpile
STR	Strength
STRUCT	Structural
SPPA	Structural Plate Pipe Arch
SYS	System
T	Traffic
TBR	Timber
TEMP	Temporary
THERMO	Thermoplastic
TRTD	Treated
Underground	
UNTRTD	Untreated
VAR	Variable
VM	Vehicular Measure
WEAR	Wearing

NON-COLLUSION DECLARATION

The following Non-Collusion Declaration shall be executed by the bidder:

State Project No _____

Federal Project No _____

STATE OF MINNESOTA _____)
)ss
COUNTY OF _____)

I, _____, do state under penalty
(Name of person signing this declaration)

of perjury under 28 U.S.C. 1746 of the laws of the United States:

(1) that I am the authorized representative of _____

_____
(Name of individual, partnership or corporation submitting this proposal)

and that I have the authority to make this declaration for and on behalf of said bidder;

(2) that, in connection with this proposal, the said bidder has not either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding;

(3) that, to the best of my knowledge and belief, the contents of this proposal have not been communicated by the bidder or by any of his/her employees or agents to any person who is not an employee or agent of the bidder or of the surety on any bond furnished with the proposal, and will not be communicated to any person who is not an employee or agent of the bidder or of the said surety prior to the official opening of the proposal, and

(4) that, I have fully informed myself regarding the accuracy of the statements made in this declaration.

Signed: _____
(Bidder or his authorized representative)

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
Project SAP 159-080-016					
1 BRIDGE (365)					
2021.501/00010	MOBILIZATION	LS	1.00		
2101.511/00010	CLEARING AND GRUBBING	LS	1.00		
2104.501/00004	REMOVE STONE MASONRY WALL	L F	34.00		
2104.501/00011	REMOVE CONCRETE CULVERT	L F	65.00		
2104.501/00016	REMOVE SEWER PIPE (STORM)	L F	101.00		
2104.501/00090	REMOVE CONCRETE BOX CULVERT	L F	64.00		
2104.507/00060	REMOVE GABION	C Y	37.00		
2104.509/00027	REMOVE CONCRETE HEADWALL	EACH	2.00		
2104.509/00100	REMOVE MANHOLE OR CATCH BASIN	EACH	4.00		
2104.521/00220	SALVAGE GUARD RAIL-PLATE BEAM	L F	16.00		
2105.522/00031	SELECT GRANULAR BORROW MOD (CV)	C Y	67.00		
2105.525/00030	TOPSOIL BORROW (CV) (P)	C Y	61.00		
2411.511/00013	STRUCTURE EXCAVATION CLASS U	C Y	73.00		
2411.604/00006	MODULAR BLOCK RETAINING WALL SPECIAL	S Y	62.00		
2501.521/90733	73" SPAN RC PIPE-ARCH CULV CL IIIA	L F	240.00		
2501.525/90730	73" SPAN RC PIPE-ARCH APRON	EACH	6.00		
2502.601/02900	DRAINAGE SYSTEM	LS	2.00		
2503.511/90125	12" RC PIPE SEWER CLASS V	L F	63.00		
2503.511/90153	15" RC PIPE SEWER CLASS III	L F	85.00		
2503.602/00042	CONNECT TO EXISTING STORM SEWER	EACH	3.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2506.502/00301	CONST DRAINAGE STRUCTURE DESIGN SPEC 1	EACH	4.00		
2514.501/00010	CONCRETE SLOPE PAVING	S Y	9.00		
2554.603/00022	INSTALL GUARDRAIL	L F	16.00		
2563.601/00010	TRAFFIC CONTROL	LS	1.00		
2573.502/00040	SILT FENCE, TYPE MACHINE SLICED	L F	191.00		
2573.505/00010	FLOTATION SILT CURTAIN TYPE STILL WATER	L F	20.00		
2573.530/00010	STORM DRAIN INLET PROTECTION	EACH	4.00		
2575.502/00350	SEED MIXTURE 350	LB	2.00		
2575.505/00060	SODDING TYPE MINERAL	S Y	349.00		
2575.523/00013	EROSION CONTROL BLANKETS CATEGORY 3	S Y	102.00		
2575.532/00030	FERTILIZER TYPE 3	LB	23.00		
2575.604/00015	SEEDING	S Y	102.00		
				Total 1 BRIDGE (365)	
2 STREET (350)					
2104.505/00108	REMOVE CONCRETE DRIVEWAY PAVEMENT	S Y	47.00		
2104.505/00120	REMOVE BITUMINOUS PAVEMENT	S Y	550.00		
2104.513/00010	SAWING BITUMINOUS PAVEMENT	L F	91.00		
2105.501/00010	COMMON EXCAVATION (P)	C Y	68.00		
2105.523/00030	COMMON BORROW (CV)	C Y	19.00		
2211.501/00020	AGGREGATE BASE CLASS 2	TON	16.00		
2211.503/00050	AGGREGATE BASE (CV) CLASS 5	C Y	112.00		
2301.501/00010	CONCRETE PAVEMENT	S Y	171.00		
2301.511/00010	STRUCTURAL CONCRETE	C Y	33.00		
2301.521/03000	PAVEMENT REINFORCEMENT	S Y	171.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2301.529/00011	REINFORCEMENT BARS (EPOXY COATED)	LB	1400.00		
2301.538/00010	DOWEL BAR	EACH	96.00		
2360.501/12200	TYPE SP 9.5 WEARING COURSE MIX (2,B)	TON	28.00		
2360.502/22200	TYPE SP 12.5 NON WEAR COURSE MIX (2,B)	TON	56.00		
2531.501/02320	CONCRETE CURB & GUTTER DESIGN B624	L F	209.00		
2531.507/00040	4" CONCRETE DRIVEWAY PAVEMENT	S Y	51.00		
2531.507/00060	6" CONCRETE DRIVEWAY PAVEMENT	S Y	35.00		
2535.501/00010	BITUMINOUS CURB	L F	47.00		
				Total 2 STREET (350)	
3 PED FACILITIES (550)					
2104.505/00020	REMOVE SIDEWALK	S Y	82.00		
2521.501/00050	5" CONCRETE WALK	S F	583.00		
2521.501/00060	6" CONCRETE WALK	S F	119.00		
				Total 3 PED FACILITIES (550)	
4 SANITARY SEWER (250)					
2104.501/00017	REMOVE SEWER PIPE (SANITARY)	L F	79.00		
2104.509/00101	REMOVE MANHOLE	EACH	2.00		
2503.511/14083	8" DUCTILE IRON PIPE SEWER CL 52	L F	79.00		
2506.502/00303	CONST DRAINAGE STRUCTURE DESIGN SPEC 3	EACH	2.00		
				Total 4 SANITARY SEWER (250)	
5 WATERMAIN (150)					
2104.501/00013	REMOVE WATER MAIN	L F	156.00		
2104.509/00111	REMOVE HYDRANT	EACH	1.00		
2503.603/03240	24" STEEL CASING PIPE	L F	33.00		
2504.602/00020	HYDRANT	EACH	1.00		
2504.602/00806	6" GATE VALVE AND BOX	EACH	1.00		
2504.602/00812	12" GATE VALVE AND BOX	EACH	2.00		
2504.603/01062	6" WATERMAIN DUCTILE IRON CL 52	L F	23.00		

BIDDER MUST FILL IN UNIT PRICES IN NUMERALS; MAKE EXTENSION FOR EACH ITEM AND TOTAL. FOR COMPLETE INFORMATION CONCERNING THESE ITEMS, SEE PLANS AND SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS.

Item No.	Description	Units	Quantity	Unit Price	Total Price
2504.603/01122	12" WATERMAIN DUCTILE IRON CL 52	L F	128.00		
2504.608/00015	WATERMAIN FITTINGS	LB	294.00		
				Total 5 WATERMAIN (150)	
				Total Base Bid	

SURETY DEPOSITS

New Law requires surety deposits for many out-of-state Contractors

A portion of payments made to out-of-state Contractors must be deposited with the state of Minnesota in many instances under a new law passed by the 1989 Legislature.

The law requires that 8 percent of each payment paid to out-of-state Contractors for work done in Minnesota must be withheld as a surety deposit on any contract that can reasonably be expected to exceed $100,000.

This requirement may be waived, however, if certain conditions are met.

Following are some guidelines to use with the new law.

Once an out-of-state Contractor enters into a contract that is for more than or can be expected to be more than $100,000, the Contractor will have to file form SD-E (Exemption from Surety Deposits for Out-of-State Contractors) with the Department of Revenue. The department will use the form to determine if the Contractor is exempt from the 8 percent surety deposit requirements.

The department will grant an exemption if:

The Contractor gives the department a cash surety or bond, secured by an insurance company licensed in Minnesota, which guarantees the Contractor will comply with all provisions of Minnesota withholding, sales, and corporate income tax laws, or

The Contractor has done construction work in Minnesota at any time during the three calendar years before entering into the contract and has fully complied with Minnesota withholding, sales, and corporate income tax laws.

If the Contractor is exempt, the department will certify the form and return a copy to the Contractor, who will then be responsible to provide a copy to whoever hired them.

If the Contractor is not exempt, the department will notify whoever hired the Contractor to withhold the 8 percent surety deposit from each payment made to the Contractor. The person or company hiring the Contractor will use form SD-D to make the surety deposits.

The Department of Revenue will retain the surety deposits until the Contractor's state tax obligations are considered fulfilled. The department will then refund, with interest, any amounts held as surety.

Out-of-state Contractors working for Minnesota subdivisions will still have to file the Withholding Affidavit for Contractors (form IC-134) in addition to complying with the new provisions.

If you need more forms of information, please call (612) 296-6181 from the Twin Cities area and (toll-free) 1-800-657-3777 from elsewhere.

You may also write to: Minnesota Department of Revenue
Taxpayer Information Division
Mail Station 4450
St. Paul, MN 55146-4450

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

TO WHOM IT MAY CONCERN:

A new Minnesota Law effective January 1, 1990, now governs contracts over $100,000.00 for non-Minnesota Contractors.

We have been informed by the Minnesota Department of Revenue that certain requirements have not been met. Therefore, we are withholding an 8% surety deposit from your payment.

You are eligible to have these funds returned when the state tax obligations are met.

Gross Amount

8% Surety Deposit _____

Net Amount Paid

If you have any questions, contact Mr. Dan Weber at (507) 328-2409.

Department of Public Works
201 4th Street SE, Room 108
Rochester, MN 55904-3740
(507) 328-2400

FORM 21126D (FF REV. 4-00)

Project No. **(J7911) & SAP 159-080-016**

GRAND TOTAL $ _____

PROPOSAL GUARANTY as required by 1208 of the Specifications: "A (certified check) (bond), prepared as required by 1208 of the Specifications and payable to the City of Rochester, Minnesota, in an amount equal to at least (5%) percent of the total amount of the bid is submitted herewith as a proposal guaranty.

NON-COLLUSION AFFIDAVIT: If a Non-Collusion affidavit is found in this Proposal it must be signed by each bidder.

RECEIPT OF ADDENDA as required by 1210 of the Specifications:
The undersigned hereby acknowledges receipt of and has considered:

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Signed _____

RECEIPT OF PLAN:
The undersigned hereby acknowledges receipt of and has considered: **SAP159-080-016, 15** Total Sheets.

Signed _____

EXECUTION OF PROPOSAL as required by 1206 of the Specifications:

This proposal dated the _____ day of _____, 20____

Signed: _____, P.O. Address _____ as an individual.

Signed: _____, P.O. Address _____ as an individual.

Doing business under the name and style of _____

Signed: _____, for _____ a partnership.

NAME BUSINESS ADDRESS

Signed: _____, for _____ a corporation,
Incorporated under the laws of the State of _____

Name of President _____ Business Address _____

Name of Vice-President _____ Business Address _____

Name of Secretary _____ Business Address _____

Name of Treasurer _____ Business Address _____

(NOTE: Signatures shall comply with 1206 of the Specifications.)